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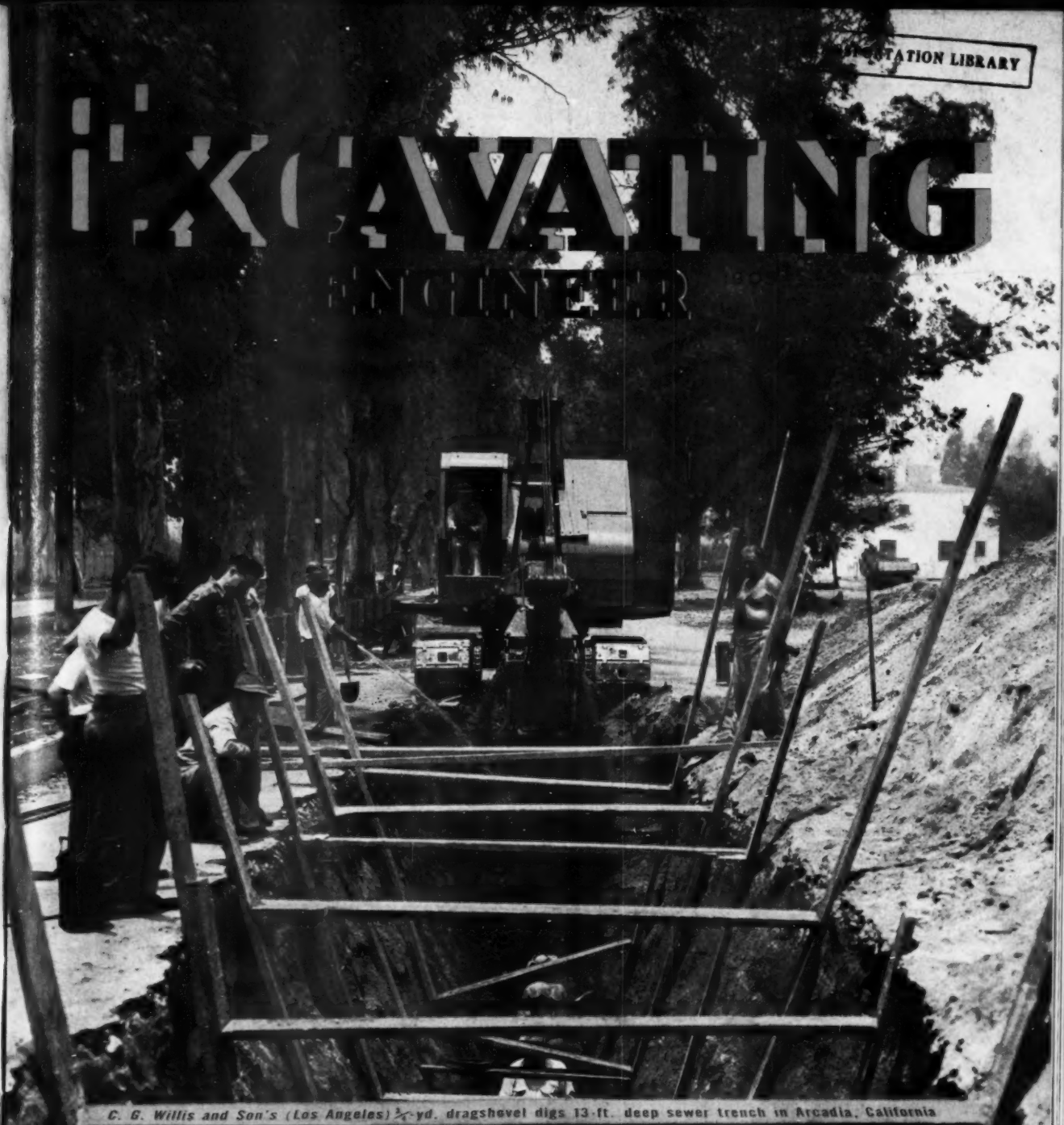
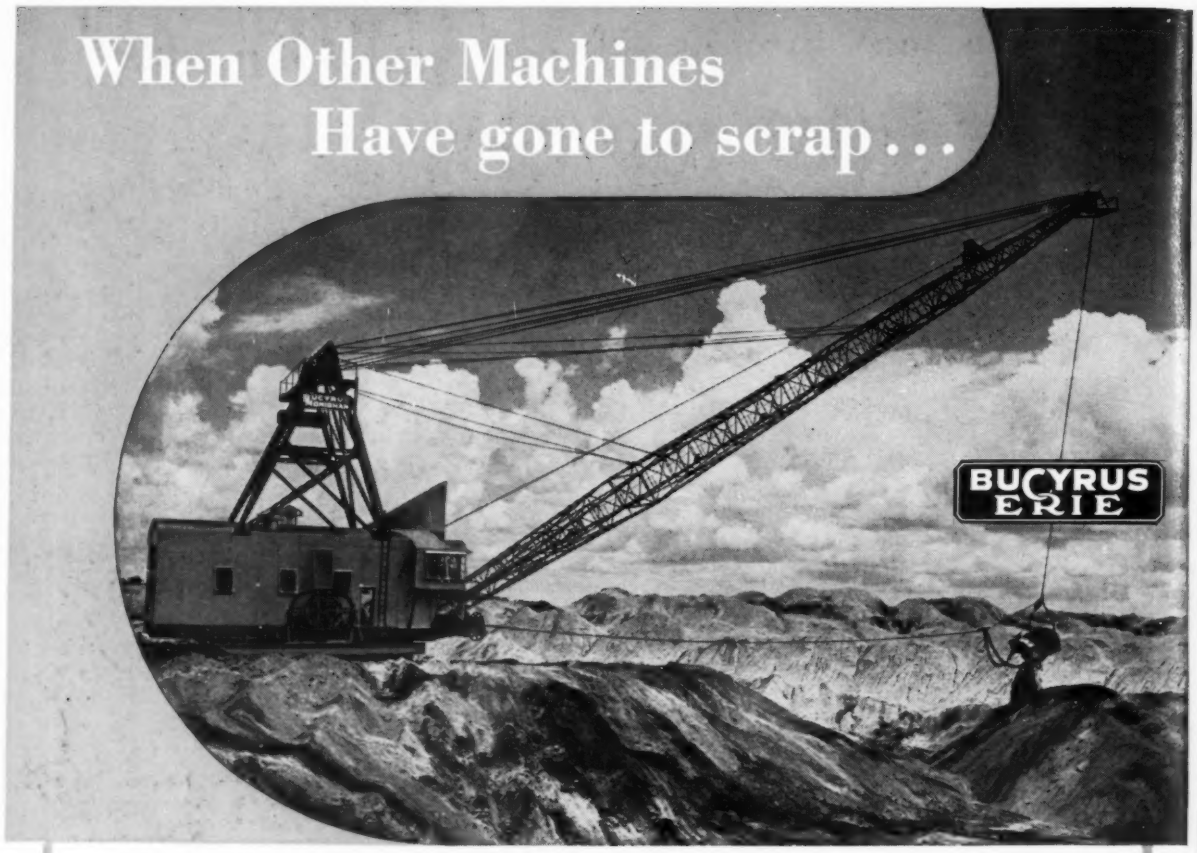
EXCAVATING ENGINEER



C. G. Willis and Son's (Los Angeles) ¾-yd. dragshovel digs 13-ft. deep sewer trench in Arcadia, California

ol. XLII November, 1948 Number 11



Bucyrus Walkers are Still Moving Dirt

Field performance records have proved that Bucyrus-Erie walking draglines are good for years and years of big output — that they have the strength in every part to endure in spite of a steady diet of tough digging.

Their "years ahead" digging speed and smoothness lasts because the strong machinery has the simplicity that keeps maintenance requirements low and digging efficiency high. The absence of complicated gadgets means less trouble and longer life because there is so little that can go wrong.

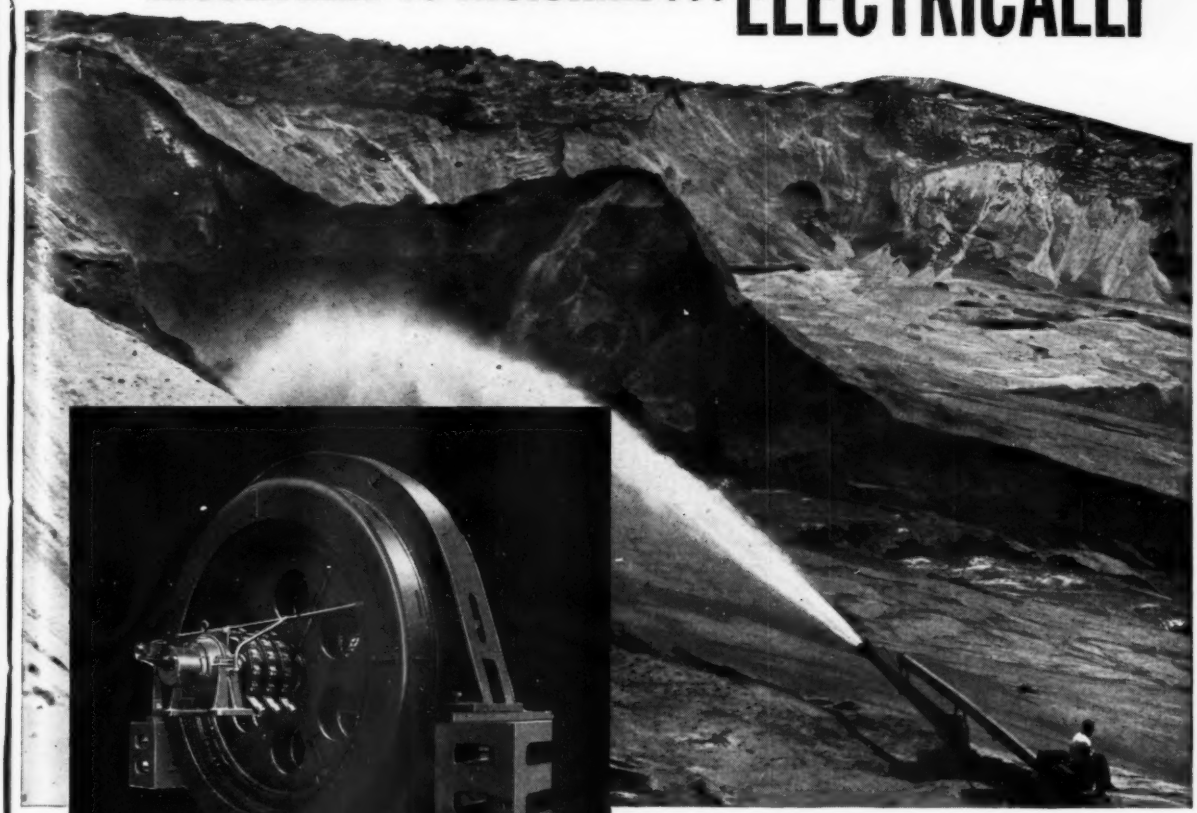
The walking mechanism lasts, too, because its smooth-working rolling cam action evenly "cushions down" the machine's weight with each step, over rough ground or soft, without the bumps or jars that cause destructive stresses. Bucyrus-Eries step out safely, positively, and gently even after many years of steady use.

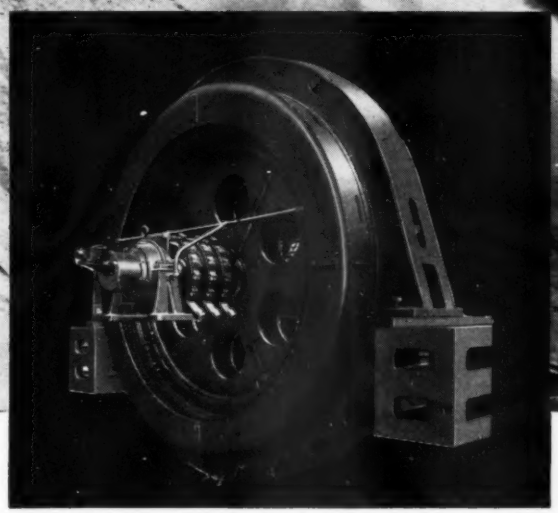
BOOMS: 110 to 250 ft.
BUCKETS: 4 cu. yd. to 25 cu. yd.

Bucyrus-Erie Co.

21M47C SOUTH MILWAUKEE, WISCONSIN

mountains to molehills . . . ELECTRICALLY





◀ Still on the job after 14 years of heavy construction work

Veteran G-E Motors Drive the Pumps on this Hydraulic Sluicing Operation

One 14,000,000-yard sand dune will be dissolved by water from this nozzle to make way for the construction of Los Angeles' new high-rate activated sludge plant. This unique hydraulic sluicing operation depends for its pumping power on six giant General Electric induction motors built back in 1934 for construction of Fort Peck Dam. After serving successfully on that project, they have been reconnected for a different voltage to go back on the job 24 hours a day, six days a week.

Electric drive, which offers the maximum in reliability with minimum maintenance, helps contractors build more for less . . . faster. Whether you buy or build construction tools, ask your General Electric representative to tell you about the inherent advantages of electric drive. *Apparatus Dept., General Electric Co., Schenectady, N. Y.*

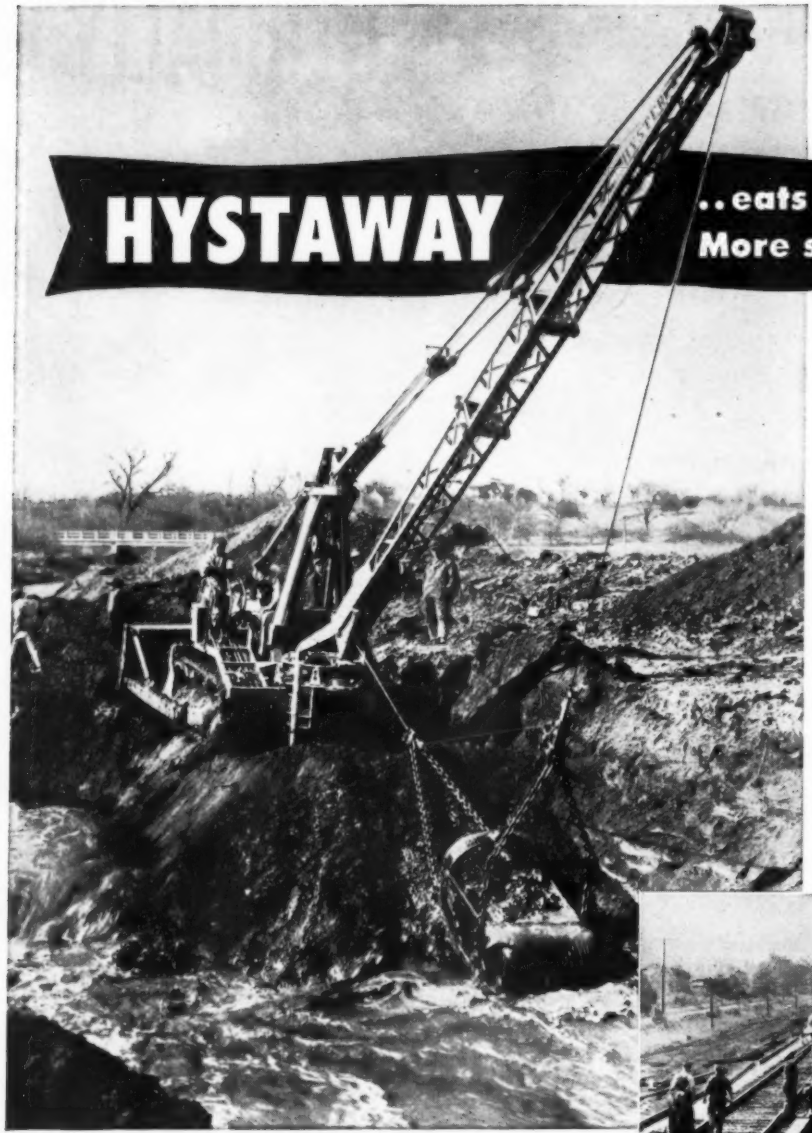
ELECTRIFIED CONSTRUCTION
BETTER PRODUCT
LOWER COST

GENERAL ELECTRIC

HYSTAWAY

..eats up work — fast! More swings per hour

HYSTER



SAVING A BRIDGE FROM WASHING OUT by diverting a stream channel is the job of this D7 Hystaway working near Lawrence, Kansas.

UNLOADING RAIL FROM GONDOLA CAR. This D6 Hystaway enabled a work crew to unload from 100 to 120 rail an hour; each rail 39 feet in length and weighing 1,430 pounds.

"TOUGHEST DIGGING I HAVE EVER SEEN A DRAGLINE DO" is the eye-witness description of a D7 Hystaway working on the Brandvlei earth-fill dam, Union of South Africa.

Good news gets around. Among construction men it's about the speedy, efficient earth moving performance of a Hystaway mounted on a D8, D7, or D6 "Caterpillar" track-type tractor. Provides tractor mobility *plus* the dragline, clamshell and crane features of the Hystaway unit.

Hundreds of Hystaways are in use on new and used "Caterpillar" track-type tractors.

Hystaway can be removed in one hour; installed again in two hours. Ask your "Caterpillar" distributor for a demonstration. Write for literature.

HYSTER COMPANY

2976 N.E. CLACKAMAS STREET.....PORTLAND 8, OREGON
1876 NORTH ADAMS STREET.....PEORIA 1, ILLINOIS

EXCAVATING ENGINEER

FOUNDED 1905

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Excavating Pavillion's Big Ditch 30

A 5-yd. walking dragline has been working 'round the clock since September, 1947, to expedite the fulfillment of many veterans' dreams of workable farm lands and homes near Pavillion, Wyoming. The excavating phase of the 2,300,000-cu. yd. Wyoming canal is scheduled to wind up this month.

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Each year, winter's relentless fury sabotages the cooling systems of tractors not serviced and protected to resist the elements' annual onslaught. Here are "winterization" suggestions to contractors and highway officials anxious to maintain their construction schedules in spite of winter weather.

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Worn Sheaves are on his blacklist

Sheaves, the Bethlehem man will tell you, can be a big factor in the life of wire rope. Whenever he sees a rope that looks "chewed up," one of the first things he investigates is the sheaves. If they're badly worn, he suggests they be replaced or re-machined. This is the stitch in time that saves nine—sometimes more.

Soft sheaves are often corrugated by the action of the rope passing over them. The same thing can happen to drums and rollers. These corrugations, or ridges, frequently grow so sharp that they nick and abrade the wires of each new rope installed. When this occurs, and you let it go on, it's just like throwing money away. Keeping a worn sheave – and spoiling a fine rope – is false economy, any way you look at it.

The Bethlehem field man is trained to ferret out such things. That's part of his job. He knows—and he wants *you* to know —how rope life can be prolonged. He'll gladly suggest a few simple precautions—like sheave maintenance – that help turn the trick.

Remember, whenever you need his help in wire-rope matters, it's yours for the asking. No cost, no obligation. Simply call the nearest Bethlehem office or distributor.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

When you think WIRE ROPE . . . think BETHLEHEM

YOUR 1ST NORTHWEST IS OUR BEST SALESMAN!

Watch a Northwest in the heart of a job like this! Note the smooth crowding action—the ease with which the dipper bites in—the freedom from stuttering. Note the smooth swing and the accurate control of the dipper when spotting. There is no time lost in jockeying for position—it's a full dipper; fast, clean swing and back again, hour after hour. The "Feather-Touch" Clutch Control assures ease of operation without complications and keeps output up. Simple design makes maintenance easy and keeps operating costs down.

It's a real Rock Shovel—built for the heart of the tough jobs. High output, low operating cost and Northwest features have made one out of every three Northwests a repeat order. They are the Money Makers for the *Key Spots* and you can't afford to have anything but the best in the *Key Spots*. Plan on a Northwest! Your first Northwest will be our best salesman.

NORTHWEST ENGINEERING CO.
1506 Field Building
135 South LaSalle Street
Chicago 3, Illinois

MAKE YOUR KEY MACHINE
A REAL ROCK SHOVEL
for the heart of the job!

PROFIT

NORTHWEST

Here's the high-speed, rubber-tired

Tournapull, Carryall—Trademark Reg. U.S. Pat. Off.

Send for Complete Facts

To: R. G. LeTOURNEAU, Inc., PEORIA, ILL. Please send information on "D" ROADSTER:

☐ Specifications ☐ Price ☐ Delivery ☐ Would like job analysis on present operations

NAME..... TITLE.....

COMPANY..... TYPE OF BUSINESS.....

STREET..... CITY, STATE.....

Would also like information on ☐ 13.3-yard "C" TOURNAPULL ☐ Big 30-yard "B" TOURNAPULL

"D" ROADSTER

... for one-man dirtmoving

100 h.p.
DIESEL
(Also available with Gasoline Engine)

This 7-yard "D" ROADSTER combines all the economies of one-man operation with the production ability of bigger-capacity, electric-control Tournapulls. It's highly mobile and small enough to put your odd jobs and utility dirt-moving on a profitable basis . . . yet, has ample load capacity, fast hauling speeds and every exclusive operating feature you need for fleet operation on production dirtmoving.

Strips overburden; works gravel pits; loads, hauls, spreads surfacing; builds, maintains access, haul roads; digs stockponds; levels building sites. Ideal for terracing, drainage, railroad maintenance. Highly profitable for fill-in work, such as stockpiling coal, chemicals, around factories and utilities during off-season. Makes fast, self-powered moves job-to-job, over pavement or cross country . . . no trailer or haul equipment needed.

Try one . . . you'll find it so handy . . . so profitable . . . you'll want more . . . write or see your LeTourneau Distributor TODAY.

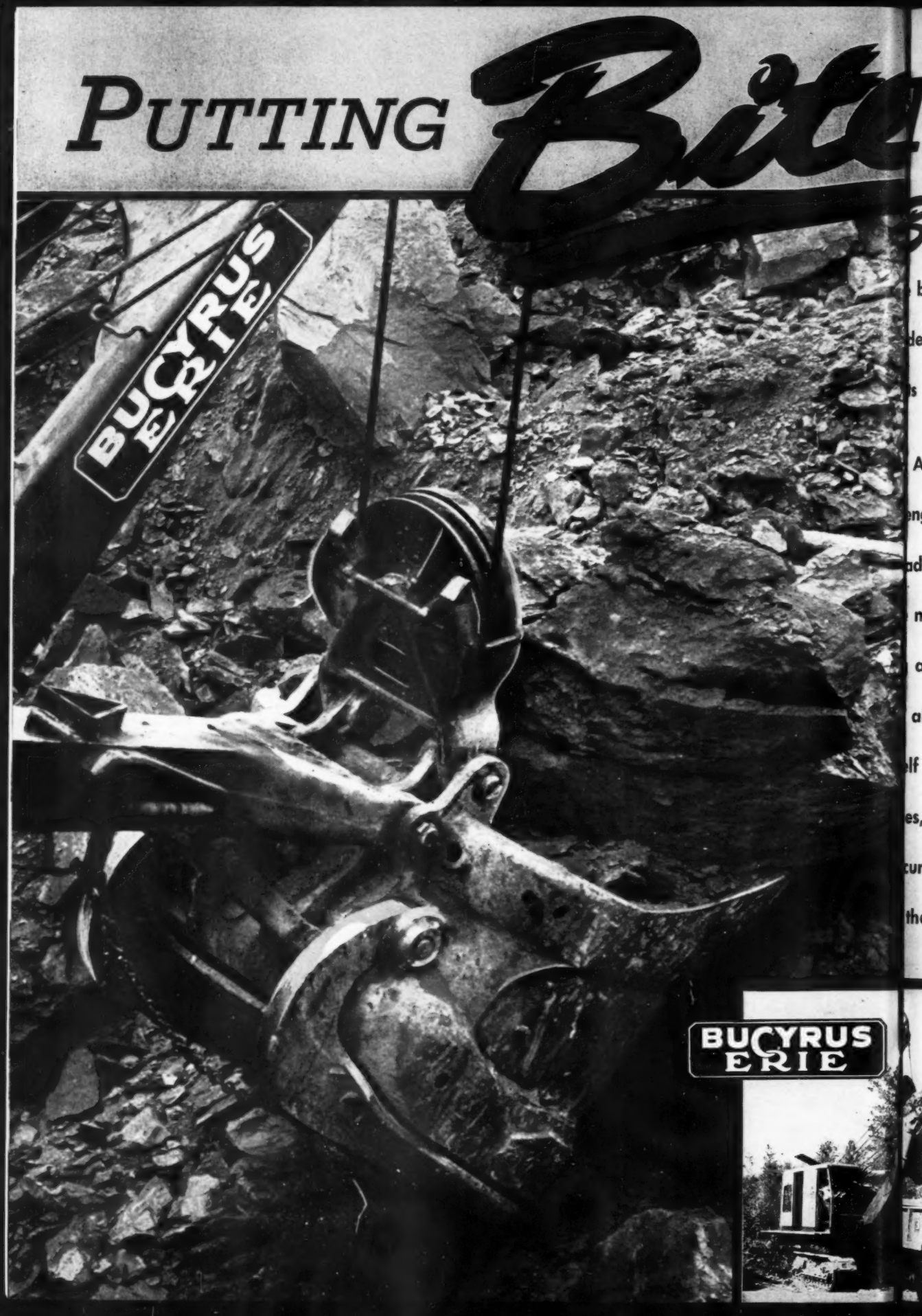
Check what this means to you:

- ✓ **5 speeds forward to 25 m.p.h.**
- ✓ **Finger-tip electric control**
- ✓ **Positive, 2-speed, power steer**
- ✓ **Power-proportioning differential**
- ✓ **Heavy-duty transmission, Sliding gear type**
- ✓ **4-wheel brakes,** *3184 sq. in. braking surface*
- ✓ **Overall width 8' 0"**
- ✓ **Gauge, center to center, of Carryall tires, 5' 11"**
- ✓ **Width cutting edge 7' 0"**
- ✓ **Four 14.00x32, 12-ply tires**
- ✓ **Weighs approx. 20,700 lbs.**

C97

E TOURNEAU PEORIA, ILLINOIS — HIGH-SPEED RUBBER-TIRED — **TOURNAPULLS**

ORE WORK PER HOUR WITH RUBBER-TIRED POWER


PUTTING
BUCYRUS ERIE
BUCYRUS ERIE

INTO SHOVEL WORK

BUCYRUS-ERIE dippers bite forcefully into bank, load fully and quickly, and stand up der the toughest digging to produce big out- s over long hours of shovel operation.

A combination of casting and welding puts ngth where it's needed, yet cuts down useless dweight to add increased efficiency, while modern streamlined design means fast fill- and quick dumping. The renewable lip is alloy steel casting, and the protruding lip lf cuts a clearance for the alloy steel plate es, thus reducing wear. The reinforced door urved to eliminate waste space at the rear the dipper and swings well back to permit clean dumping. Reversible, forged tool steel teeth furnish superior cutting ability, and can easily be removed for resharpening by forging or welding.

For a strong, capable dipper that can be depended upon for a heaping load at every pass, and for effective shovel operation that maintains peak production, you will want to learn more about Bucyrus-Eries. Let your distributor give you further details about Bucyrus-Erie ⅜- to 2½-cu. yd. excavators. They're well worth investigating.

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

94E47C

THE TIGER BRAND SPECIALIST SAYS—
"If your wire
USS
AMERICAN
TIGER BRAND
WIRE ROPE
UNITED STATES STEEL

e ope takes a beating like this, ou ought to check the application"

"The foreman on this job was blowing his top. He was already behind in production when this machine went down. He swore that the wire rope was no good.

"We took a look at the sheaves. They were badly worn. Then I asked him, 'When did you check those grooves?' Nobody on the job could remember when the sheaves had been regrooved.

"We got out a gage. Sure enough, that's where the trouble was. The grooves had worn down so that the proper size gage nowhere near bottomed. Now they're regrooving and I sold him on the idea of letting me check all his equipment. I'll bet we keep his business and his ropes will give twice the service."

Are you sure you have the RIGHT wire rope for your job!

Are you convinced beyond a doubt that your wire ropes are operating at the lowest obtainable unit cost?

Are you sure that your equipment is contributing fully to long, safe rope life?

If not, you should have a check-up by a TIGER BRAND Specialist—a thoroughly experienced field service engineer.

To show you how the proper application of wire rope can save you money, we have prepared a new booklet to help you check your own operating conditions.

SEND FOR NEW FREE BOOKLET

American Steel & Wire Company
Rockefeller Building, Dept. E-11
Cleveland 13, Ohio

Gentlemen:

Please send me a copy of your booklet, "Valuable Facts about the use and care of Wire Rope."

Name.....

Company.....

Position.....

Address.....

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
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TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

As Far Ahead in Ease
and Servicing as in

SIMPLIFIED SERVICING

All adjustments are unusually accessible.

All fittings or lubrication points readily reached — none under tractor. Draining transmission final drives and engine crank case are the only operations which need to be done from beneath the tractor.

Types of oils and greases needed are cut to a minimum.

ONLY 3 LUBRICATION PERIODS
No daily lubrication necessary:

AT 75 HOURS—drain engine oil.
. . . change lubricating oil filter elements.
. . . check final drive, transmission and hydraulic steering.
. . . only 3 grease fittings: 2 on torque converter; 1 on engine clutch release.

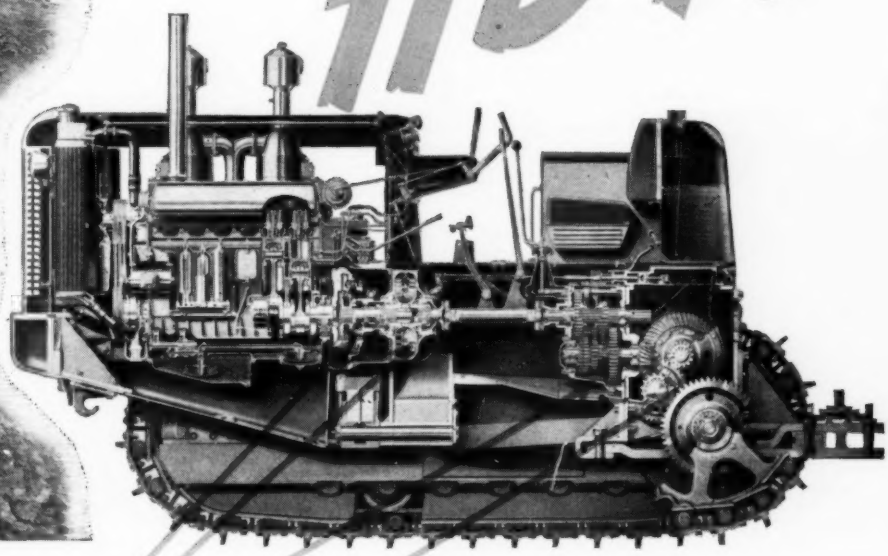
AT 200 HOURS—drop oil in cups of starter and generator. 4 fittings; fan, fan belt idler and universal joints.

AT 1,000 HOURS—change oil in transmission and final drive.
. . . lubricate truck wheels, track idlers and support rollers.

FASTER, EASIER SERVICING, MEANS LESS "DOWN TIME". . . LESS COST . . . HIGHER OUTPUT. *SIMPLIFIED MAINTENANCE MEANS BETTER MAINTENANCE, TOO!*

e of Maintenance
n Performance!..

Allis-Chalmers HD-19



REPAIRS EASILY ACCOMPLISHED

No need to remove unrelated parts to reach units needing attention.

Engine clutch and torque converter can be removed without disturbing engine or transmission — transmission assembly removable without disturbing engine, clutch or bevel gear.

Each steering clutch removable independently of final drive or bevel gear.

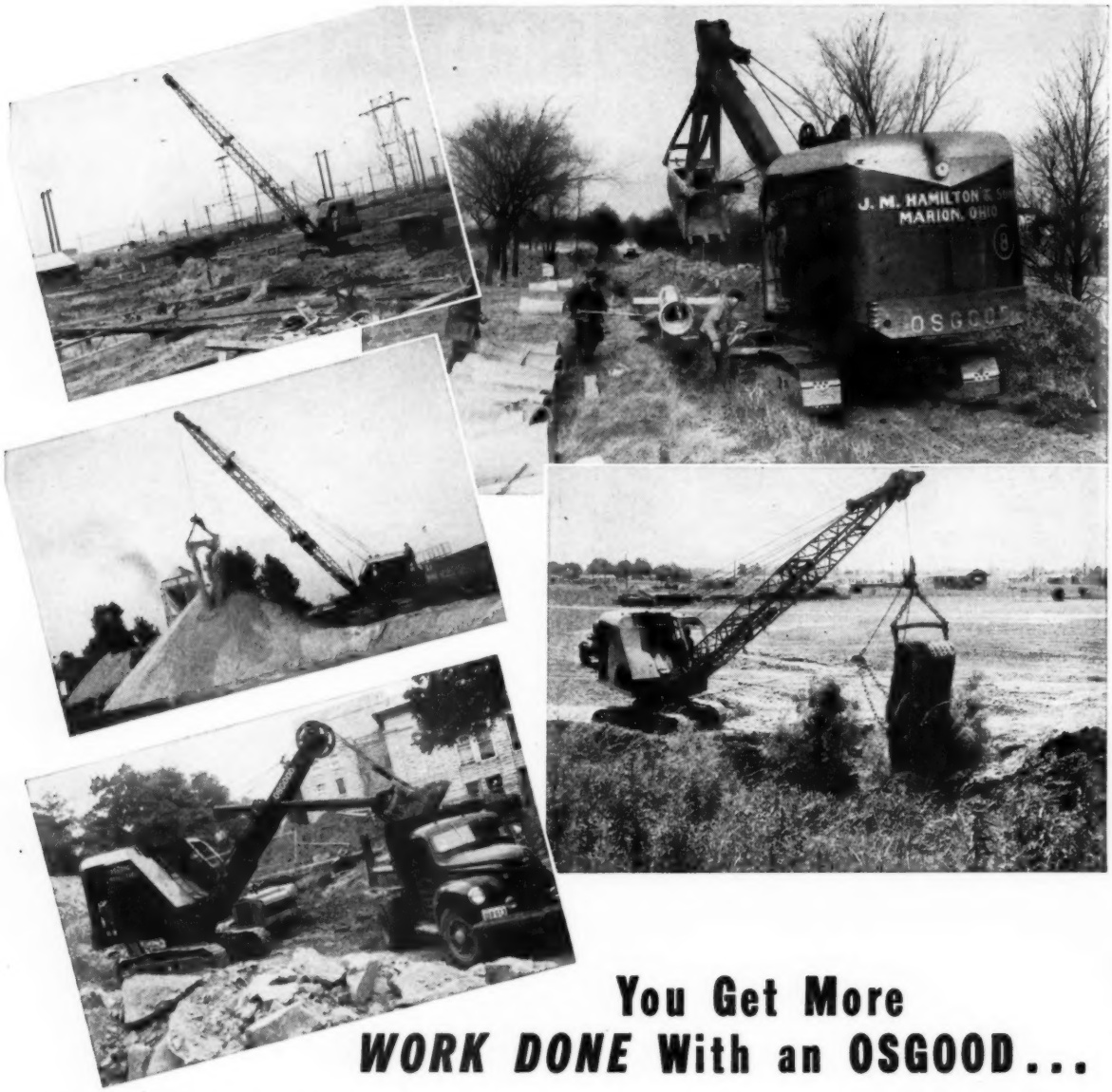
Special tools cut to minimum.

Complete stocks of replacement parts—made in same factory to same exacting specifications as are on original tractor—are carried by Allis-Chalmers dealers.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

★ ORIGINATOR OF THE TORQUE CONVERTER TRACTOR



You Get More *WORK DONE* With an OSGOOD...

"WORK DONE" is the best measure of value. Put an OSGOOD in any kind of service and watch it perform. Check its efficiency, its speed, its versatility; observe its maneuverability, its ease of operation, the minimum amount of service it requires as a Shovel, Dragline, Crane, Clamshell, or Hoe. Compare its total yardage, its low cost of operation with that of any comparable equipment—that's the real test. Yes, whatever the job, you'll do it best with an OSGOOD.

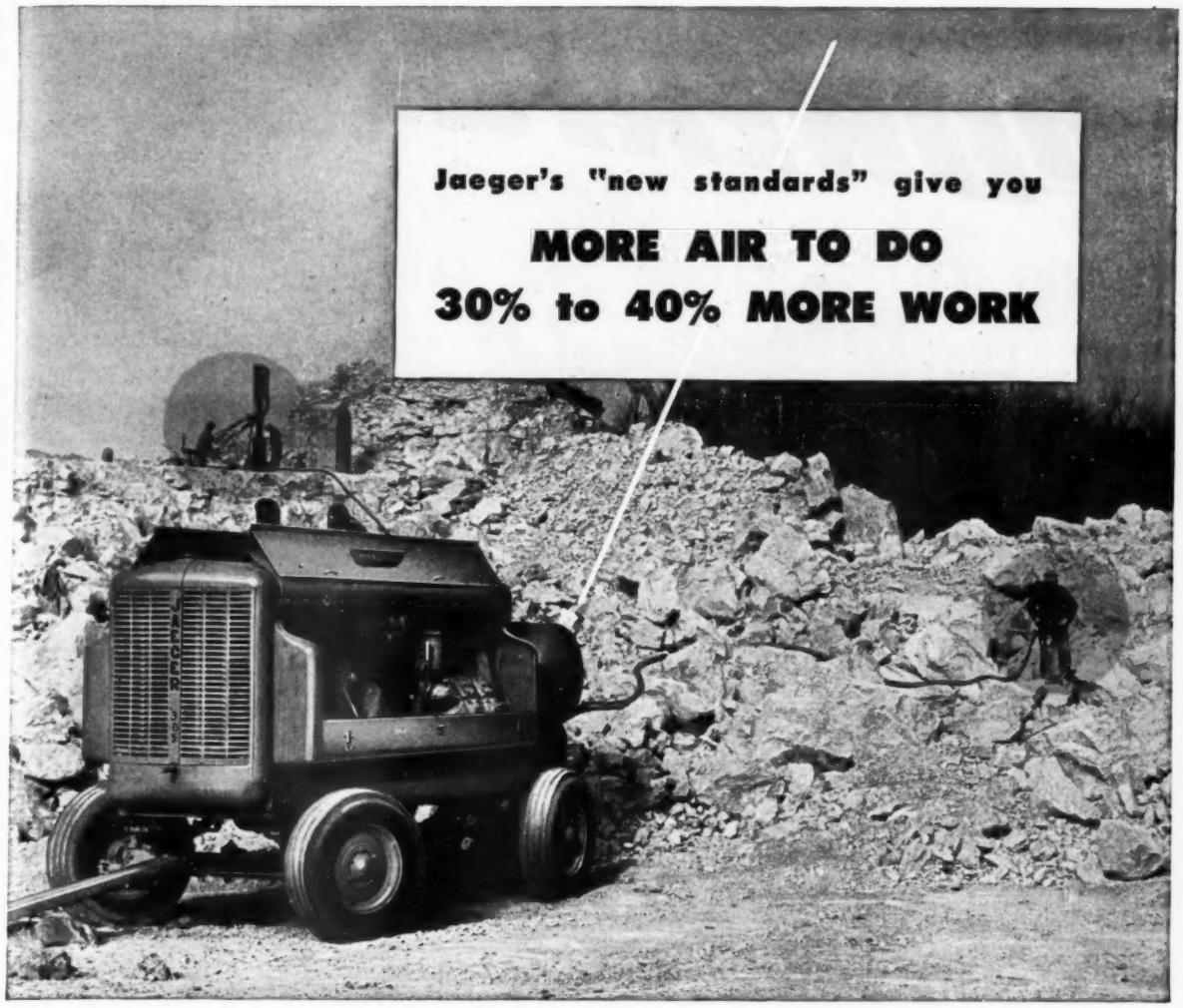
Gasoline, Diesel or Electric powered . . . ⅜ to 2½ cu. yds. Crawlers or Mobilcranes. Write for descriptive literature and specifications.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. O-G THE GENERAL CO.
EXCAVATOR

MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES



Example: "New standard" 365 ft. compressor will operate a heavy duty wagon drill plus a rock drill or heavy breaker at full 90 lbs. pressure — doing up to 40% more work than a 315 ft. unit which runs the same tools at a pressure of only 70 lbs.

Because "old standard" compressor ratings, established in 1932, do not match today's air tools and cannot operate these tools efficiently, Jaeger takes the lead in offering complete "new standard" sizes — 75 ft. of air instead of 60 — 125 ft. instead of 105 — 185 ft. instead of 160 — 250 ft. instead of 210 — 365 ft. instead of 315 — 600 ft. instead of 500.

This increased air maintains the steady 90 lbs. pressure at which tools reach their full drilling speed and hitting power, actually do 30% to 40% more work than the same tools under 70 lbs. pressure from undersized compressors.

Because Jaeger's "Fuel Miser" control automatically regulates engine speed to air demand, these units do not consume an ounce more fuel than the smaller "old standard" sizes when their *additional* capacity is not being used. For full details, see your Jaeger distributor or send for new Catalog JC-8.

THE JAEGER MACHINE CO., Columbus 16, Ohio

regional offices:
1504 Widener Bldg., Philadelphia 7
226 N. La Salle St., Chicago 1
235 American Life Bldg., Birmingham 1

JAEGER
engineered equipment
COMPRESSORS • DIAGONAL SCREED FINISHERS
SCREW SPREADERS • BITUMINOUS PAVERS

POWERFUL *Workhorse-*

THE TOUGHER THE JOB THE MORE YOU NEED A BAKER

Here's a rugged "he-man" outfit that can take a real beating and "dish it out" in return. The sensational performance of the giant Allis-Chalmers HD-19 teamed up with the Baker Hydraulic Bulldozer has rocked the entire earthmoving industry — set a new high in production — a new low in cost. Compare the Baker with any bulldozer on the market — you get direct lift; direct down pressure; engine mounting, 5-position adjustable blade tilt; interchangeable bulldozer or grade-builder blades; blade pitch adjustment; smooth, fast, dependable hydraulic control, plus extra rugged construction which has made Baker famous throughout the world.

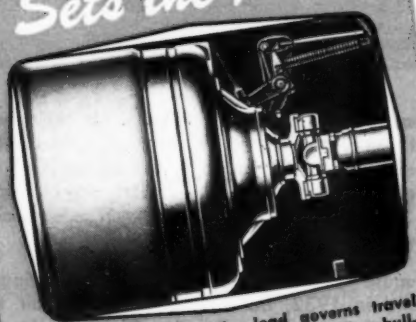
Mounted on an HD-19 you've got an unbeatable bulldozing team — speed, power, traction and over 48,000 lbs. of fighting weight. Your best bet is Baker. See your Allis-Chalmers Baker dealer now.

BAKER MFG. CO., SPRINGFIELD, ILL.

BAKER *They Go Together!* A-C

BAKER

THE TORQUE CONVERTER *Sets the Pace*



FASTER FORWARD. The load governs travel speed, not the operator's judgment. When bulldozer is in forward range, travel speed is as high as load and grade will permit.

FASTER REVERSE. High reverse is almost instantaneous, for under "no load", tractor zooms into high at 7 miles per hour to return for another pass.

LESS SHIFTING. The torque converter does the shifting automatically—changes tractor speed in relation to load and grade. Forward and reverse levers are all operator is concerned with.

More Yardage

BULLDOZERS • GRADE BUILDERS • SNOW-PLOWS

TO MOVE LOADS AND EQUIPMENT

Faster and at Lower Cost...

HAVE YOUR GENERAL TIRE DEALER SPECIFY, INSTALL AND SERVICE THE TIRES FOR THE JOB!

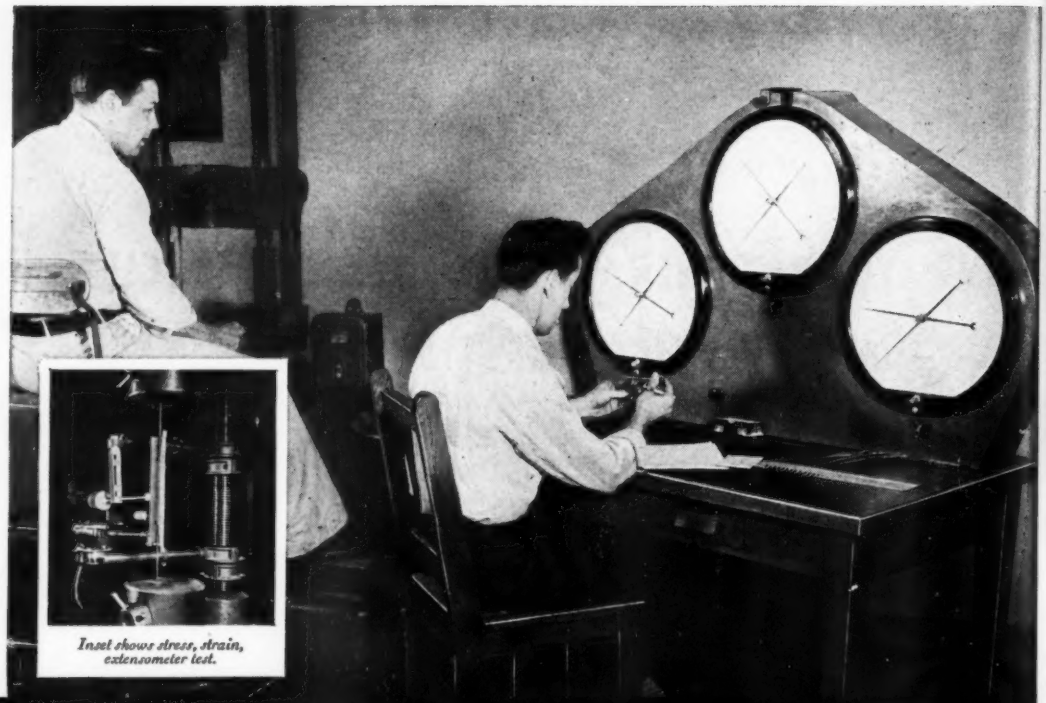
The General Earth-Mover for free-rolling wheels is designed to ride higher, roll more easily and use less energy from the power wheels. The self-cleaning tread is made up of thick, bold-faced blocks which spread the load weight evenly and protect the carcass against cutting and bruising. Easy-flexing tire body absorbs obstructions that would injure a hard tire. Those who use it know... this tire moves more yards of dirt faster, and at lower cost.

The General TIRE

General Non-Directional Cleated Tire is unsurpassed for extra drive wheel traction in soft ground, sand or gravel. Equal traction is developed forward or backward, making this tire well suited for cranes, shovels or dump trucks. A wide center rib provides an easy steering, smooth ride on the highway, and assists in the long wear qualities built into the tire... from reinforced bead to extra thick tread. Shock absorber construction absorbs bumps that would become bruises.

The General L. C. M. has proved itself as the outstanding truck tire for hard, heavy hauling where extreme tire strength and exceptional traction requirements are the deciding factors. With the "V" of the power cleats pointing forward, drive wheels are ready to go through almost any kind of mud, slush or poor road condition; yet there is no sway and little noise on the highway. With the "V" of the power cleats pointing backward, The L. C. M. is suitable for power wheels that spend part of their time on paved roads, for drawn wheels... for long, even wear and enormous load capacity.

THE GENERAL TIRE & RUBBER COMPANY
AKRON, OHIO



Inset shows stress, strain, extensometer test.

How to Measure the Muscle in Rope Wire

Measuring the muscle—or tensile strength—of rope is one of many important tests used in grading Wickwire Rope. And the engineers who supervise these tests are tough taskmasters.

Before they release a single coil of wire to the Rope Mill, they take two samples from each end of every coil. These samples are gauged for size and roundness. Then the wire is subjected to the extensometer test, the tensile, torsion and elongation tests. Tolerances are even more exacting than those established by the industry; any wire not meeting the standards is rejected. Colored tags listing size, strength and other data are affixed to acceptable coils. These tags stay on the coils until they are made into wire rope—and the data they contain is kept on file for future reference.

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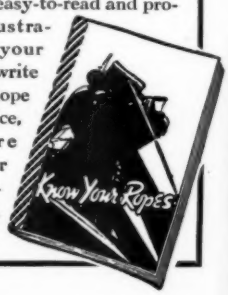

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A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

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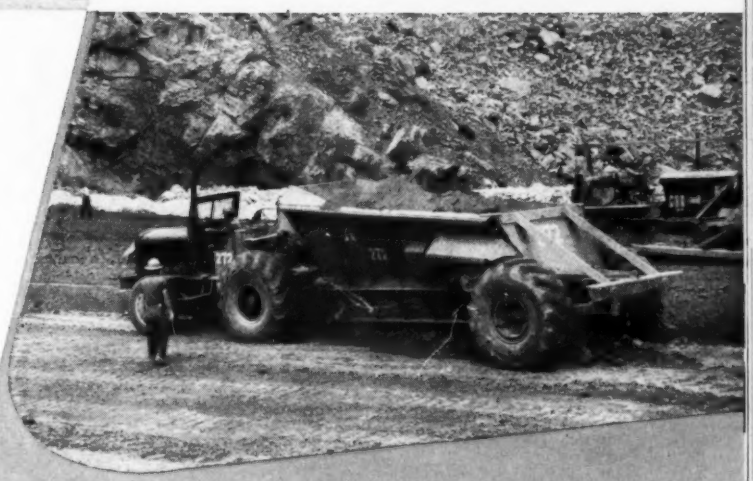

From borrow pit to fill, "Eucs" haul big payloads at Watauga under a wide range of operating conditions. Of sturdy but simple construction, Euclid equipment gives peak performance day after day at low maintenance cost.

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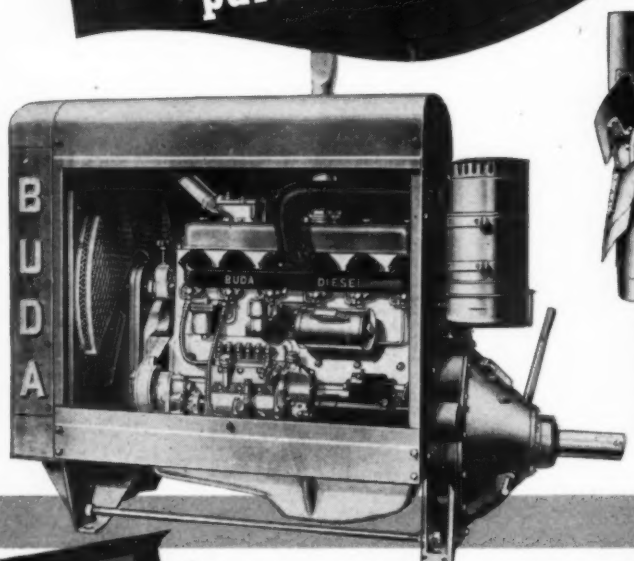

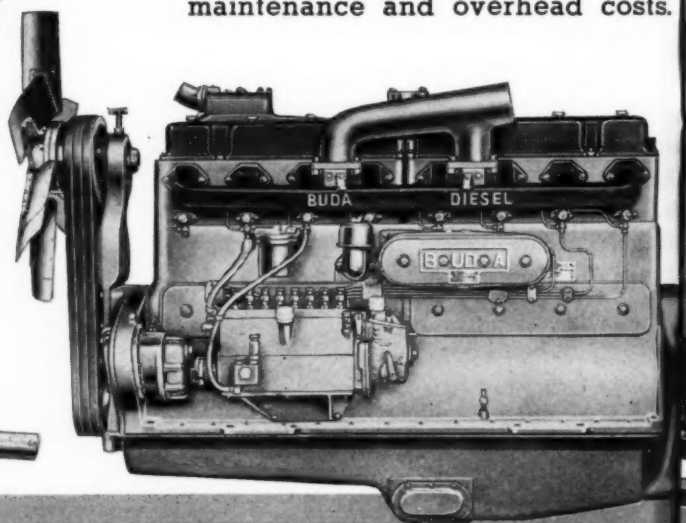

35 *Industrial power units*

For excavators, crushers, pumps, compressors, saw mills, and all types of industrial equipment, Buda builds 19 Diesel and 16 gas-gasoline power units and industrial engine models, from 5 to 440 h.p.

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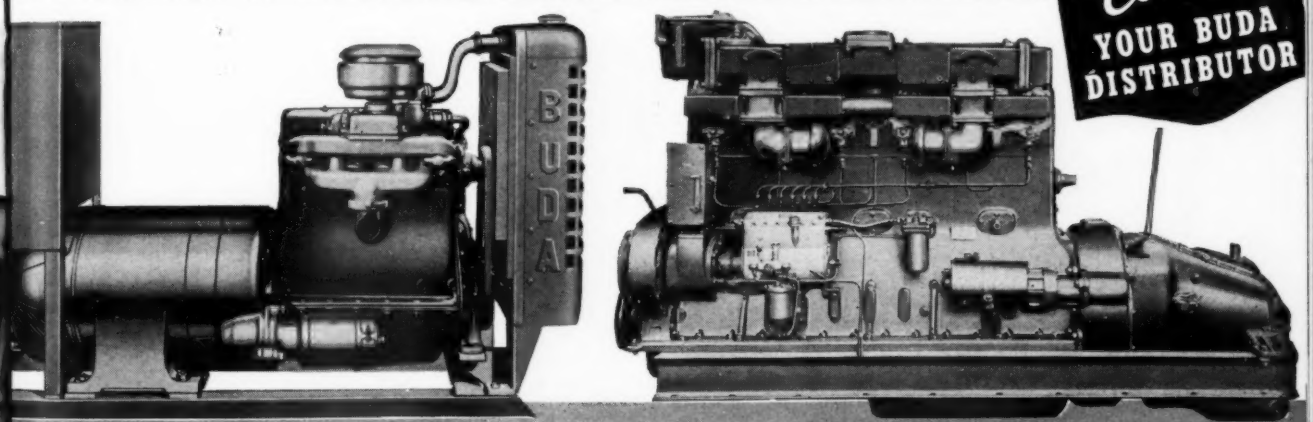

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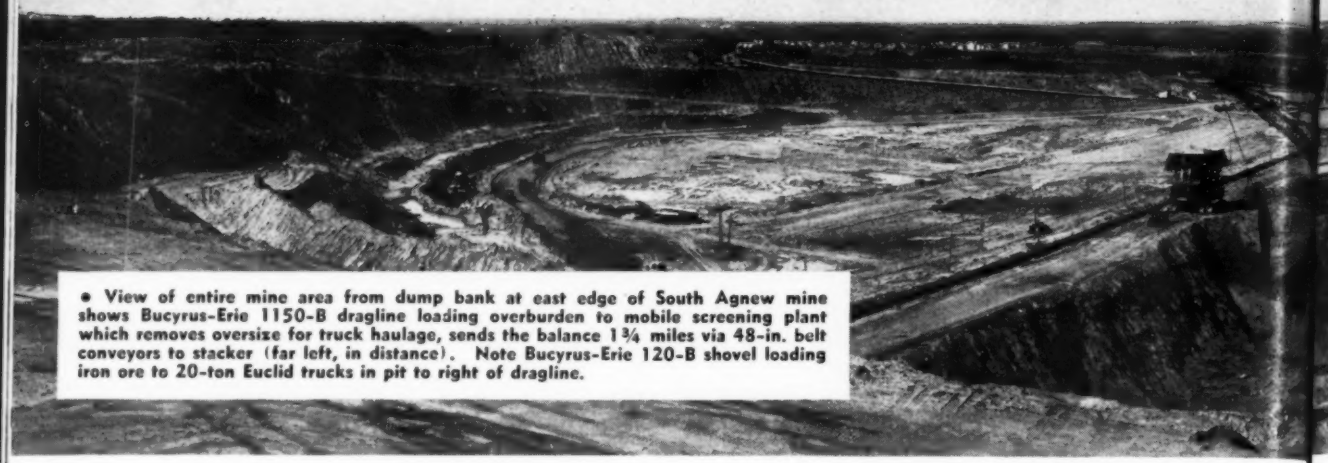
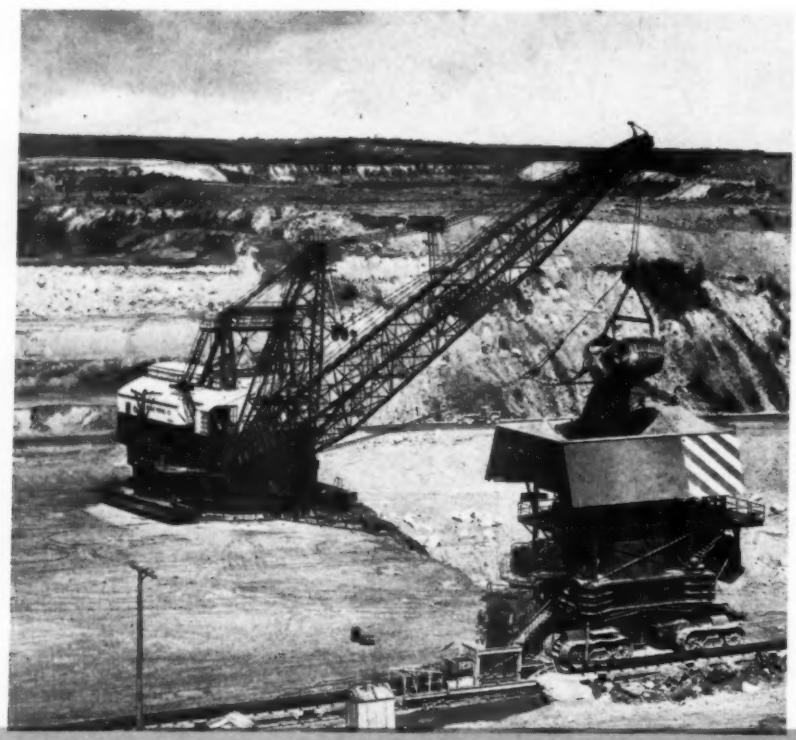


• View of entire mine area from dump bank at east edge of South Agnew mine shows Bucyrus-Erie 1150-B dragline loading overburden to mobile screening plant which removes oversize for truck haulage, sends the balance 1¾ miles via 48-in. belt conveyors to stacker (far left, in distance). Note Bucyrus-Erie 120-B shovel loading iron ore to 20-ton Euclid trucks in pit to right of dragline.

Large Dragline-Conveyor Team-

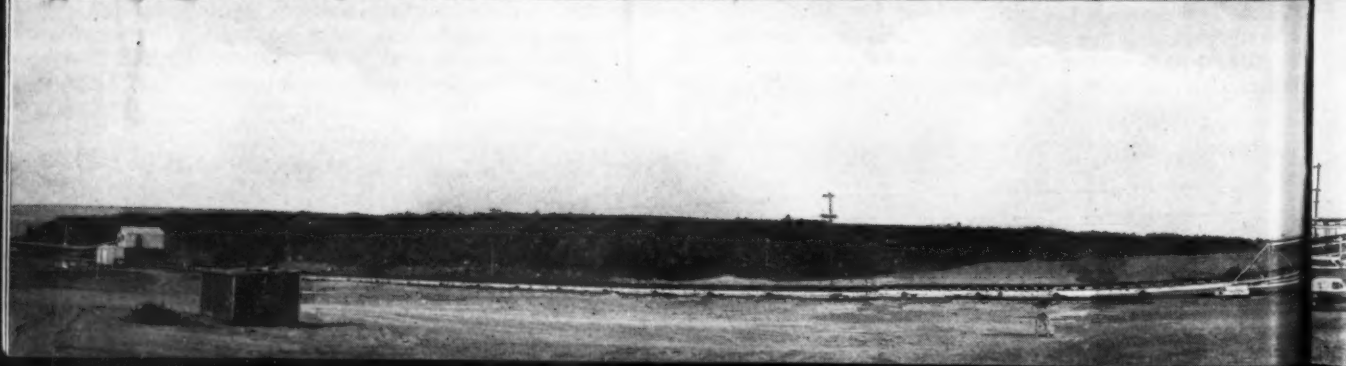


• Above: The walking dragline weighs 1210 tons, swings a 25-yd bucket on its 180-ft. boom. Screening plant is mounted on the self-levelling base and crawlers of a Bucyrus-Erie 550-B electric stripping shovel.

UNTIL a few months ago, the modern accepted—and almost exclusive—method for stripping overburden from iron ore deposits on Minnesota's northern Iron Range has employed 4 to 6-cu. yd. shovels and truck haulage out of the deep pits. Starting last May, Butler Brothers, pioneer Mesabi operators, struck a new note in deep stripping which may revolutionize Range practice for certain kinds of work.

A Bucyrus-Erie electric 1150-B walking dragline, with 180-ft. boom and 25-cu. yd. bucket, is excavating 160 feet of overburden in two lifts at a 600,000-cu. yd. per month clip. The excavator, largest on the Iron Range, and one of the largest in the world, loads directly to a caterpillar-mounted screening plant which feeds undersize to a 48-in. belt conveyor. Overburden is transported an ultimate 1¾ miles over seven consecutive belt conveyors to a mo-

• Below: At the stacker end of the operation, overburd[en] passes from a trailing conveyor travelling at 550 fpm to [a] 245-ft. long stacker, with belt travelling at 650 fpm. Fas[t] speed at the stacker prevents pile-ups at final transfer house [at]



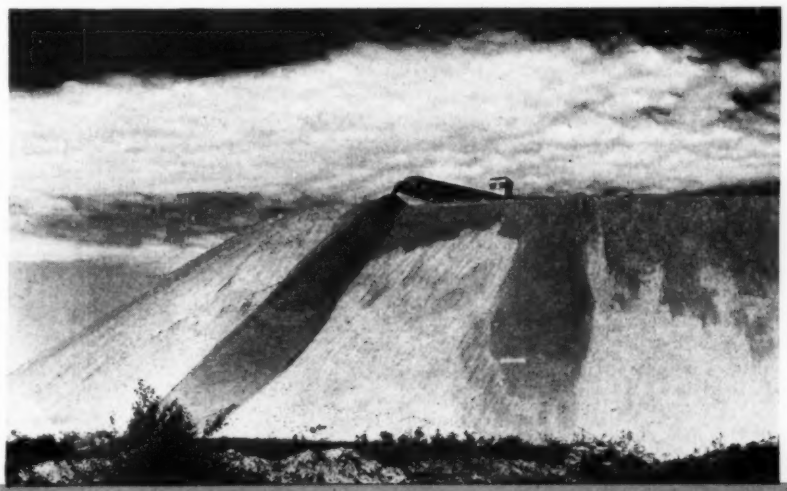
n-New Solution to Mesabi Stripping

At Butler Brothers' South Agnew mine, a 25-cu. yd. dragline, loading directly to a mile-long screening plant belt conveyor-stacker combination, is stripping 600,000 cu. yds. a month in a unique operation.

bile stacker. Total rise from loading hopper to stacker boom is at present 150 feet, and will eventually be 240 feet when loading from the second level.

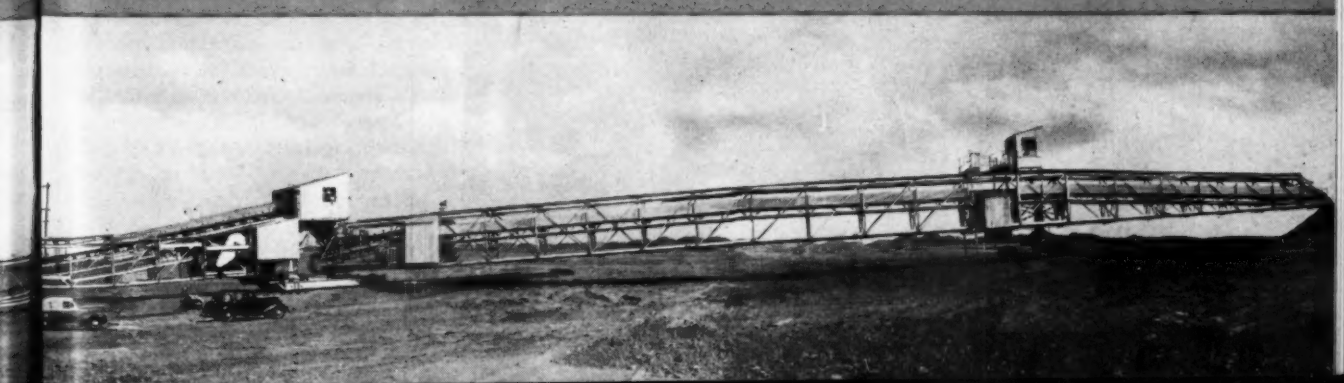
The South Agnew mine—owned by Mesabi Mineral Association—was an underground operation of the Inter-State Iron Company from 1920 to 1931. A combination of mining difficulties and then current economic conditions forced this firm to abandon operations after 2,700,000 tons of high grade ore had been removed. Impervious and semi-impervious bands of clay lying above the orebody effectively sealed off the largely quicksand overburden. But each blast would open fissures in the clay bands, allowing quantities of quicksand to flow into the drifts. The miners could find no practical way to correct this condition and the property lay dormant until 1943.

That year, Butler Brothers leased mining rights and began to



ives better trajectory at dump. Stacker swings through 180-degree arc about universal joint at transfer house in foreground by means of a Bucyrus-Erie 54-B dragline caterpillar mounting.

• Above: From present ground level, the stacker appears tiny atop the 150-ft. high fill it is building. Fill will cover an area of 100 acres when the estimated total of 10 million cu. yds. has been deposited.



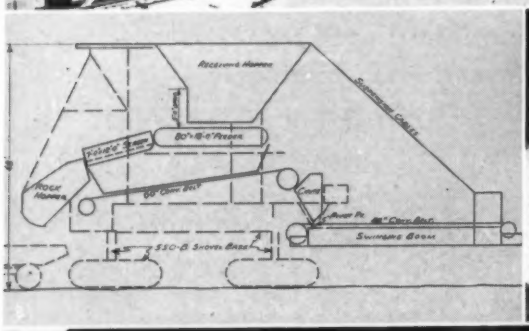
• 1. The screening plant loading hopper h... a capacity of 260 cu. yds. Material is fed to ... 7 x 12-ft. modified Simplicity vibrating scre... by a 7 x 18-ft. manganese pan conveyor. Un... dersize falls to a 60-in. belt conveyor which i... turn discharges to the boom conveyor show... loading to the main line hopper.

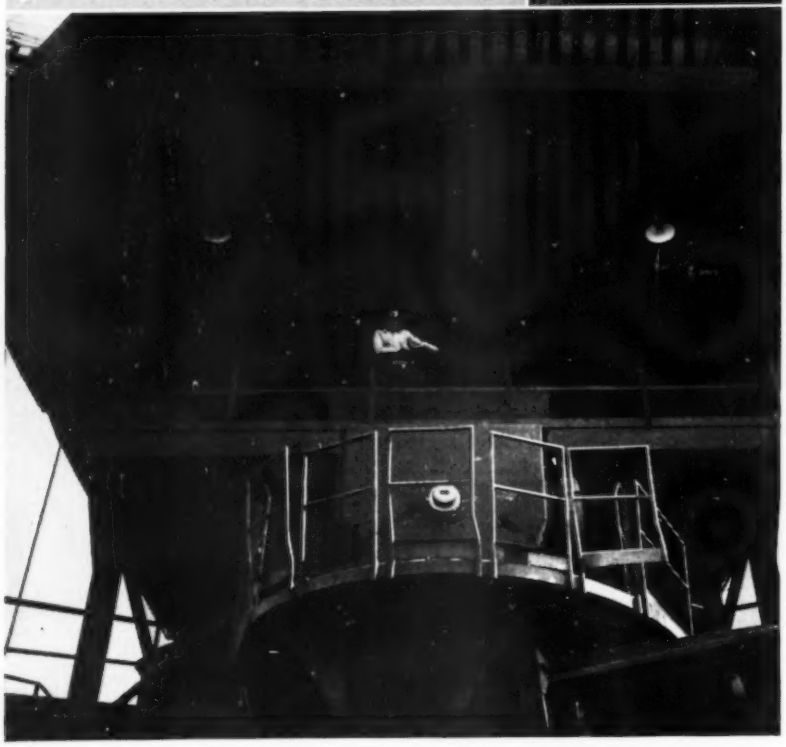
• 2. Diagram shows relationship of major u... in screening plant.

• 3. Automatic recorder mounted on one of t... dragline's swing motors keeps a detailed reco... of operation.

• 4. From ground level, the 500-ton (emp... weight) screening plant towers 48 feet ove... head. Clarence Christensen (at rail) is pla... foreman.

• 5. Oversize from the Simplicity vibrat...





look around for the best means of removing the 6,400,000 tons of high grade ore remaining (according to the Mine Directory of Minnesota). It was decided at the very start that open pit methods would be used.

Usual Methods Impractical

Shovel and truck stripping, the accepted method on the range, seemed to be impractical here due to the depth of the ore body and the absence of suitable dump grounds in the immediate vicinity. Truck disposal would have required hauls up to 1¾ miles with exceptionally steep grades—8 percent or better—to climb out of the relatively small area of the pit. Besides, haul roads in the fine sand would be difficult to maintain.

Seeking a more efficient method, Butler officials visited open pit operations in other parts of this country. They were particularly interested in the new use of large electric walking draglines in the coal fields of Pennsylvania. As a pioneer in the use of ore-handling conveyors on the Mesabi, the company saw an opportunity to develop a dragline-conveyor team that would handle overburden in one continuous operation from bank to dump.

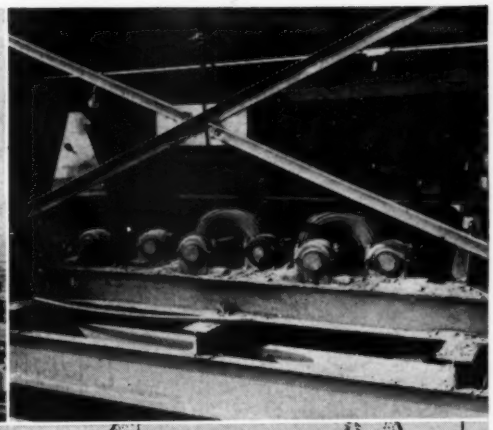
Several problems remained to be solved, however. Never before had a large dragline been used on such a large scale to load directly to a hopper. No conceivable belt conveyor could handle overburden containing rocks as great as eight feet in principal dimension. As a matter of fact, overburden had never before been handled by a conveyor on the Range. The de-

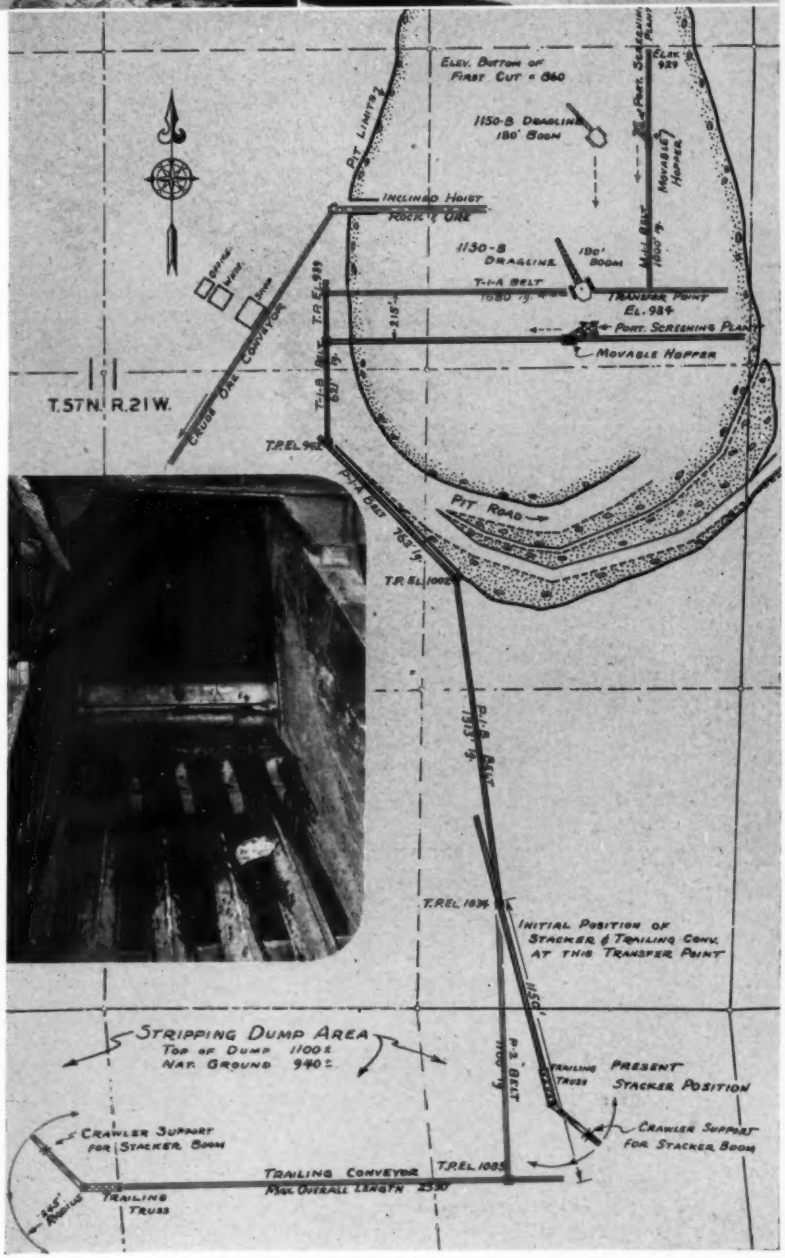
reen falls to a pocket which discharges to 20-ton Euclid trucks for hauling to the east dump. All conveyor idlers on the job were supplied by Jeffrey Manufacturing Co.

• 6. Pneumatic idlers under transfer hopper absorb shock of falling material, conserve belt. These are 8 ply 6:00 x 9 Goodyears carrying 30 psi.

• 7. Simplicity vibrating screen has been modified to long tapered 4½ to 8½-in. wide openings to scalp boulders. Beam above opening to hopper (background) has been altered to allow larger rocks to pass.

• 8. Diagrammatic layout of entire operation. Black lines show present conveyor positions. Red lines indicate changes to be made when dragline works lower lift and fill grows to ultimate size.





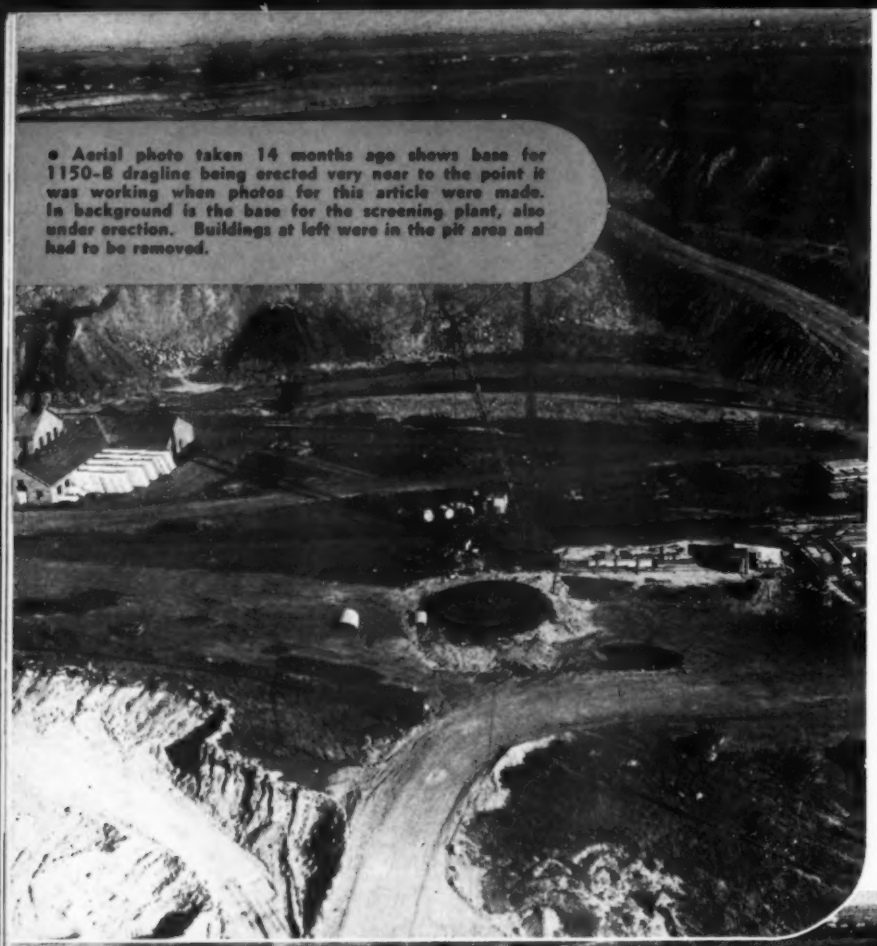
sign and construction of a mobile screening plant, larger than any then known, would be required to remove oversize before feeding material to a belt conveyor. Portability of the entire set-up was a "must."

Made Precision Casting Test

Controlled tests were made with a 25-cu. yd. dragline in Pennsylvania. An area, 30 x 28 feet, the anticipated size of hopper opening, was staked out on the ground to see if the operator could successfully cast material in such limited space. He could—easily and repeatedly. Butler Brothers' representatives were convinced that the machine would fill the bill. Accordingly, an 1150-B walking dragline was ordered from Bucyrus-Erie Company.

Design of screening plant, conveyor, and stacker units was accomplished by Company engineers in cooperation with the manufacturers. The entire screening and conveying system was engineered to handle a maximum of 2,250 tons of undersize per hour. Oversize (plus 8½-in.) was to be hauled from the screening unit pocket by trucks.

Actual work at South Agnew began in June, 1946, with leveling of the site for placement of conveyors, buildings and railroad trackage, and relocation of access roads as well as a township road which passed through the area. Old dump banks overlapped the planned wall of the new pit and had to be moved back. Caving of underground drifts had left a large depression in the center of the location. In all, 2,500,000 yds.



• Aerial photo taken 14 months ago shows base for 1150-B dragline being erected very near to the point it was working when photos for this article were made. In background is the base for the screening plant, also under erection. Buildings at left were in the pit area and had to be removed.

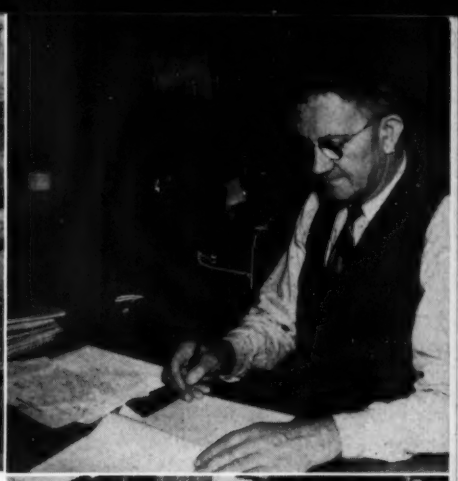
of material were moved between June, 1946, and January, 1948, by a 4½-yd. Bucyrus-Erie 120-B electric shovel loading to 20-ton Euclid trucks.

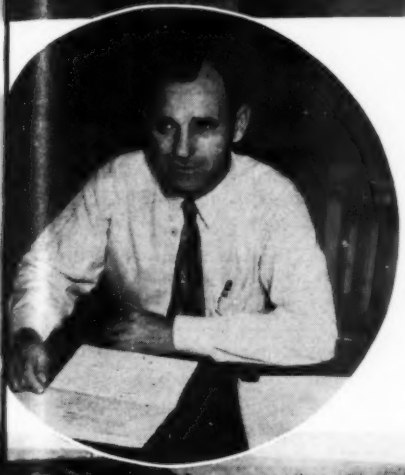
Although original plans called for start of full scale stripping operations in April, 1947, material and equipment shortages delayed this phase until May 17, 1948. In the meantime, the 120-B—having completed leveling and construction of hauling roads—was assigned the stripping of relatively shallow overburden at the west edge of the pit. The machine moved a total of 1,500,000 cu. yds. —largely sand with some boulders and clay—the first half of this year.

Shovel Sets Record

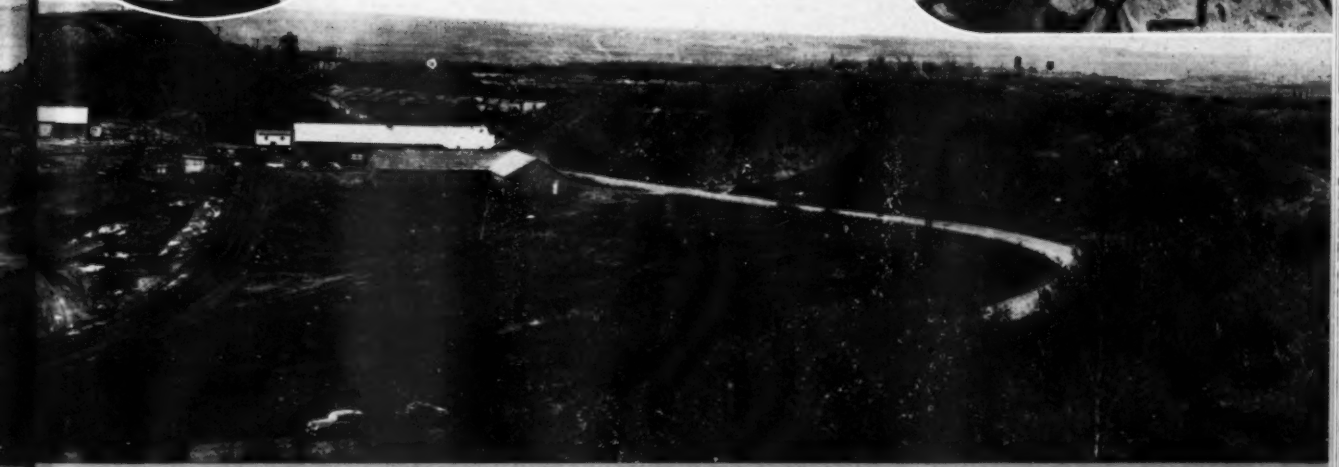
During this period, the 120-B rolled up a three-month production record never before equalled on the range by a shovel of its capacity. January yardage was 319,000 (464 cu. yds. per elapsed hour); February 301,000 (459 cu.

• "Before and after" photos taken from approximately the same spot (on the south edge of the mine area) show progress of job from Sept. to

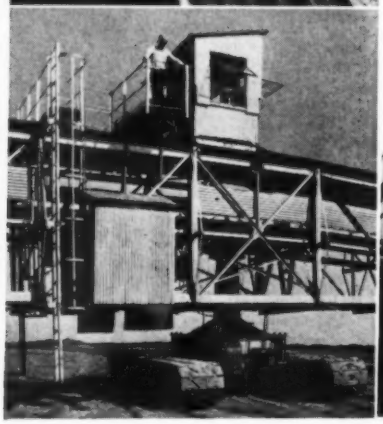




- **Left: Earl S. Mollard is Butler manager of mines.**
- **Above Left: Superintendent of Hibbing District Mines H. E. Reese.**
- **Above: South Agnew Master Mechanic Bill Langevin and Wilho Rantala, conveyor maintenance foreman, discuss a current problem.**
- **Above Right: Holder of Butler time card no. 1 is Mesabi pioneer Gust Weggum, master mechanic for all operations since 1910 and a Butler man for 43 years. One of the company's mines, "Weggum," was named for him.**
- **Right: Lloyd Bredvold is engineer at South Agnew.**



to September, 1948. In this period, the property was levelled; buildings removed; dragline, screening plant, and conveyor system erected.



• Top: Emergency line paralleling 48-in. belt conveyor allows instant stopping of entire system from any point.

• Above: Limit switches around center pin of Bucyrus-Erie 54-B caterpillar mounting help operator keep stacker tracks travelling in true arc. Each set of treads is powered by a separate 15-hp electric motor.

yds. per elapsed hour); March 327,000 (476 cu. yds. per elapsed hour). Best day was February 10, when the unit loaded 14,339 cu. yds. in 22½ actual working hours, with the mercury wavering at 25 degrees below zero.

Erection of the dragline, starting December 15, 1947, led off construction of the present stripping and materials-handling setup. The 1150-B was put in operation April 12 of this year, casting overburden bordering the pit to dump piles further back. This work served to train operators before precision casting to the screening plant hopper began.

April 30 saw the first test of the hopper and screening plant. This unit weighs over a million pounds, is mounted on the self-leveling base and crawlers of a Bucyrus-Erie 550-B electric stripping shovel, giving it a traveling speed of .2 miles per hour. The automatic leveling feature is important to prevent conveyor belts from "climbing."

The stacker, tested May 1, 1948, swings through an arc of 180 degrees at the dump by means of a caterpillar mounting—a Bucyrus-Erie 54-B dragline long mounting and crawlers.

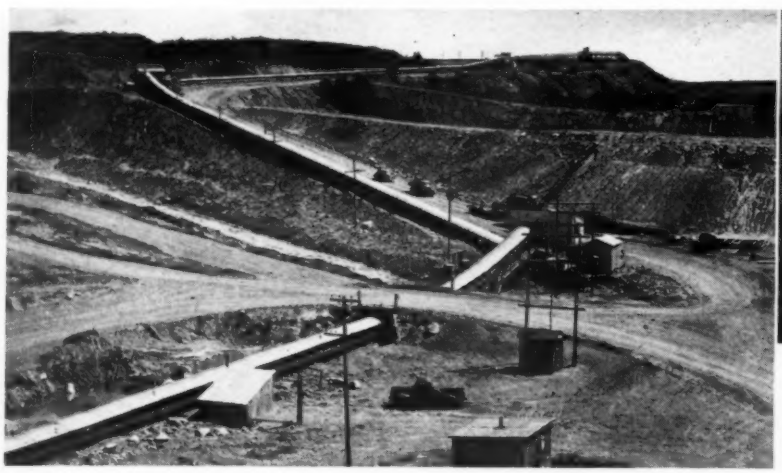
First tests of the 48-in. belt conveyors were made May 12. Unit sections were composed in 20 and 40-ft. lengths and mounted on skids for portability. Design of the conveying equipment was accomplished by the Jeffrey Manufacturing Company in conjunction with Butler engineers. Over 20,000 feet of 6-ply rubber covered belt was purchased from the Goodyear Tire & Rubber Company. Conveying system motors

• Above: Conveyor sections in 20 and 40-ft. lengths are mounted on skids with Jeffrey idlers, and rails for travelling feeder hopper. Here workmen couple sections together (with the aid of a Koehring rubber-mounted crane) for a new primary line. When dragline completes pass across pit, present primary conveyor (background) will be removed and this one put into service.

It was announced on August 31 that sale of a substantial interest in Butler Brothers has been made to a group composed of Armco Steel Corp., Inland Steel Co., Wheeling Steel Corp., and Hanna Coal & Ore Corp., an affiliate of the M. A. Hanna Co.

Butler Brothers business will continue under the same name by the same operating personnel, but Hanna will assume the supervision and management of the operations as agent for the interested parties.

• Below: 48-in. Goodyear belts zig-zag out of pit 1¾ miles under haul road and from transfer point to transfer point to stacker (background).



• Above: Excavating Engineer representatives found this caroded miner's pick—unearthed from the abandoned underground workings—on the dump back high above the big dragline (background).

were supplied by Westinghouse and starting equipment by General Electric Company. Speed reducers are of Link Belt manufacture.

Since the entire screening, conveying, and stacking system was quite new in size and application, operations were limited to a single shift per day from May 17 until May 31. The remaining sixteen hours of each day were used to make indicated alterations and adjustments and to work out the inevitable "bugs." Following this testing period, South Agnew shifted into high gear with all equipment working a full three shifts per day, seven days a week.

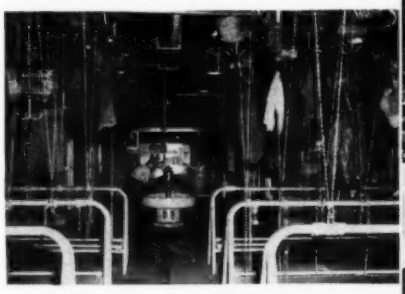
Stripping work progresses along parallel east-west lines, with the dragline placed 170 feet from the toe of the 70-ft. highwall on one side and 170 feet from the screening plant hopper on the other side. The dragline makes a 230-ft. cut, dumping material to the 30 x 28-ft. hopper opening, located 48 feet above ground level. Material in the first lift is 25 feet of clay and boulders over 45 feet of sand.

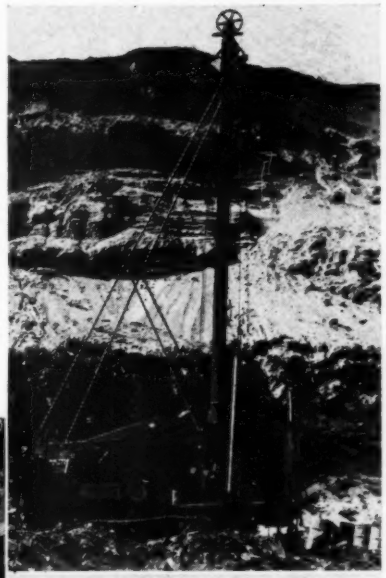
Operators are instructed to mix material bucket by bucket to keep the plant supplied with a uniform mixture. Boulders—of which there are many in the top layer—over four feet in principal dimension are cast to the toe of the highwall for truck removal rather than loaded to the screening plant.

Starting a new cut, the dragline takes six 7-ft. 6-in. steps backward, digs clearance for the twin drag ropes; then takes two steps forward and finishes the cut. No set procedure is used in completing the cut, the operator being governed by demand at the screening plant.

When more material is needed,

(Continued on page 64)





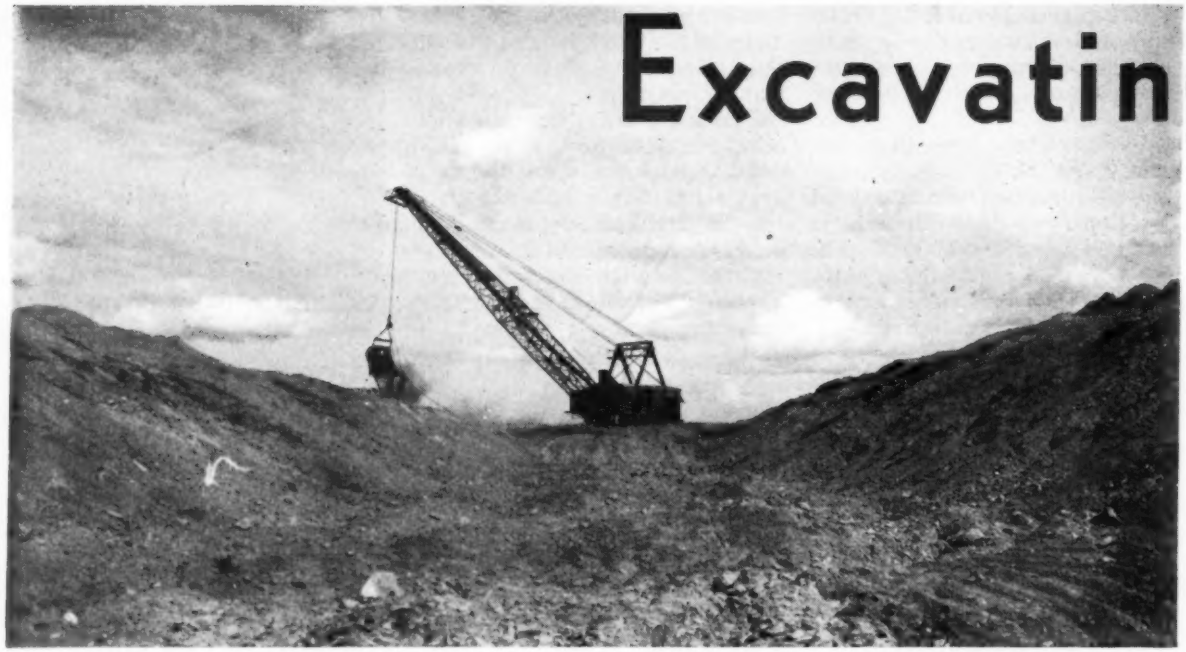
• **Top Right: In the orebody (at the western edge of the property) uncovered by the 120-B shovel, a Bucyrus-Erie 29-T churn drill puts down 9-in. by 30-ft. blast holes.**

• **Above: South Agnew's washhouse is one of the finest on the Range.**

• **Right: Ore now being loaded at South Agnew is dumped direct to railroad cars.**

• **Below: 20-ton Macks swing in for 4½-yd. gulps of iron ore dished out by the Bucyrus-Erie 120-B electric shovel.**

Excavating



• Bucyrus-Erie 200-W walking dragline scoops out 5-yd. bucket loads in the canal excavation at station 1356. The Cooper-Bessemer-powered rig moved 12,000 cu. yds. in 22½ hours in this section.

A 5-yd. walking dragline has been working 'round the clock since September, 1947, to expedite the fulfillment of many veterans' dreams of workable farm lands and homes near Pavillion, Wyoming. The excavating phase of the 2,300,000-cu. yd. Wyoming canal is scheduled to wind up this month.

HARD-HITTING forces of Morrison-Knudsen Company, Inc., Boise, Idaho, are speeding completion of 13.7 miles of finished canal at Pavillion, in the lower Wind River district of Central Wyoming, and 25 miles Northwest of Riverton. This is a forerunner of future projects in connection with the Bureau of Reclamation's newly-launched Riverton project.

Water for irrigation purposes will be obtained from a diversion dam already built across Windy River, about 15 miles west of Pavillion. Water stored in Bull Lake Reservoir, 25 miles west of Pavillion, will be released into Windy River as needed on the project. The project's overall length will be approximately 45 miles, involving the main canal, a network of laterals, sublaterals and farm turnouts, and a tunnel not yet under contract at this writing.

Transformation of Wyoming wasteland to irrigable productive farmlands is the ultimate goal of the Bureau of Reclamation, providing many homestead acreages to qualifying GI's. Eligible ex-servicemen interested in homesteading in Central Wyoming — qualifying on the basis of farming experience, ability to obtain necessary productive equipment, willingness and initiative — were selected by lot, the lucky ones winning homestead tracts.

A December, 1947, Bureau of Reclamation drawing in Riverton awarded 9,000 acres to 68 veterans. An additional 7,000 acres will be assigned this year, 21,000 acres in 1949, and 28,000 in 1950. These large areas will soon be transformed from desert wasteland and sage brush to row upon row of beans and sugar beets — two commodities grown in abundance in this area.

There are indications that additional large tracts of land will be considered for productive farmland development if Bureau plans materialize for the construction of a dam near Dubois, in the upper Wind River Basin. Boysen Dam, an integral part of the Bureau's vast network of irrigation, power and flood control — as outlined by the Missouri Valley Authority—is also being constructed by Morrison-Knudsen Company. Although the Pavillion project is molehill to Boysen's mountain, each shall have an important function in creating newly-made and thriving communities.

Put New Dragline to Work

A new Bucyrus-Erie 200-W walking dragline was chosen by contractor M-K as the principal piece of equipment for excavation of the Wyoming Canal. The huge machine, powered by a 365-hp Cooper-Bessemer FW-6 diesel, attracted much interest throughout the vicinity of the project. Local interest in the rig began with the arrival of the first of 10 carloads of equipment required to assemble the dragline — nine carloads of component parts and one car of 42-tons of steel punchings for ballast.

With a 7-ft. step, the walking speed of the Bucyrus-Erie is 0.25

Pavillion's Big Ditch

mph. The boom is 125 feet long with an extra 15-ft. extension if needed. An Esco 5-yd. bucket is suspended on 1¼-in. hoist ropes and boom and drag ropes are ⅞ and 1½-in. respectively. The machine was assembled at Riverton (railpoint nearest to Pavillion) in 23 days by a crew of 19 men. Pieces were unloaded from cars by a Bucyrus-Erie 22-B crane and heavy trucks carried them to the erection site where a Manitowoc Speed-Crane facilitated assembly work.

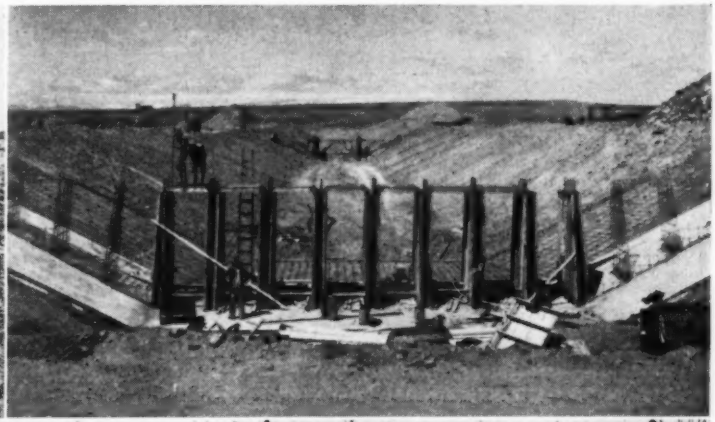
The first of 2,200,000 yards in the main excavation was moved on September 23, 1947, and the big dragline is scheduled to complete its job this month. Even through the 30-below-zero weather of last winter, the rig scooped out its big bites on a 24-hr. schedule.

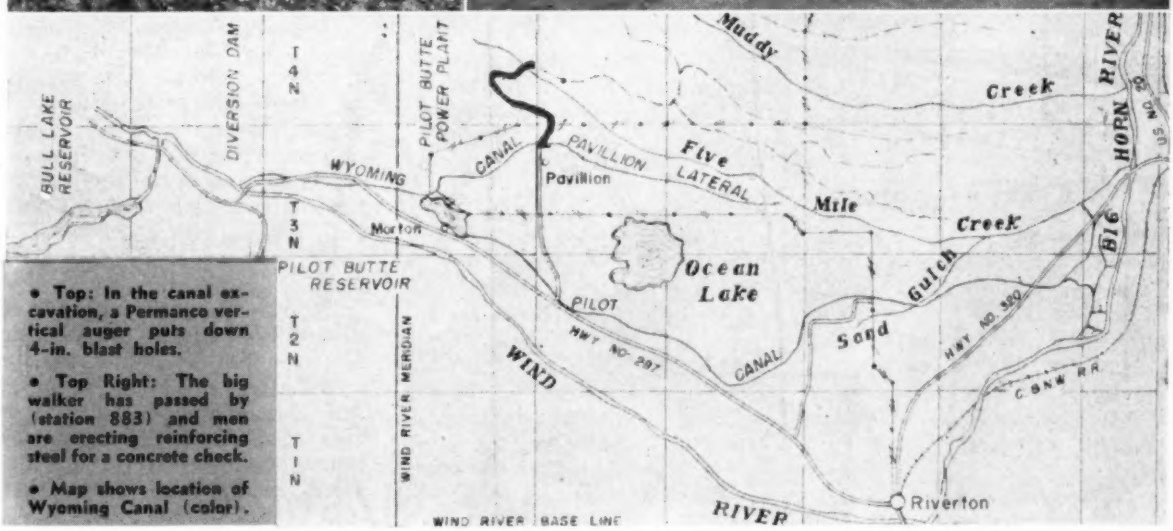
Material encountered was of many types and peculiarities from powdery dirt to heavy rock — particularly the type referred to as "stone-sand." Although drilling by jackhammers and a 4-in. Permanco vertical auger and shooting were required, this strange material showed a tendency to crumble into a fine sand after four or five days' exposure to the atmosphere. Heavy powder charges were required in most stone-sand areas in order to prepare them for excavation.

The finished canal will measure 34 feet wide at the bottom, has an average top width of 74 feet, and will maintain a flow of 9½ feet of water. In addition to excavating work in the main canal, the M-K contract calls for 6,000 cu. yds. of compacted embankment, 6500 cu. yds. of structure common excavating, 3,500 cu. yds. of structure rock excavation, 18,500 cu. yds. of backfill, 11,500 cu. yds. of compacted backfill, 3,000 cu. yds. of concrete, and various lengths and sizes of concrete pipe for farm and lateral turnouts.

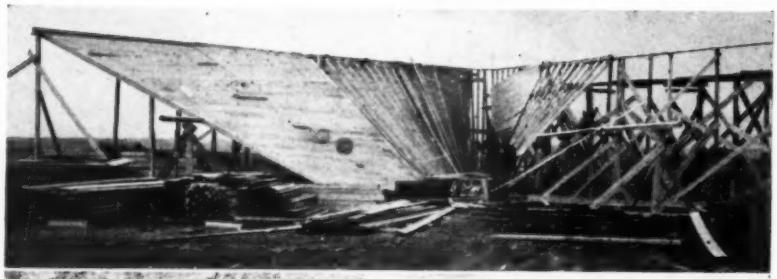
The Manitowoc crane, using a 1½-yd. dragline bucket, excavated a 3-mile drainage ditch designed to protect the main canal from surface flows. The rig also handled all concrete pipe on farm turnouts, concrete pours, and put down most of the structure excavations.

A Caterpillar D-8 bulldozer with





- **Top: In the canal excavation, a Permanco vertical auger puts down 4-in. blast holes.**
- **Top Right: The big walker has passed by (station 883) and men are erecting reinforcing steel for a concrete check.**
- **Map shows location of Wyoming Canal (color).**



• **Top: A drop transition form — to be used for paving the three drops in the canal — is prefabricated.**
• **Center: The form is installed for pour of drop no. 1 at station 997.**
• **And the pour is accomplished by this Manitowoc crane swinging a 1½ yd. Garlinghouse concrete bucket from a Euclid-mounted 3-yd. Rex transit mixer to the form.**

a 14-yd. Caterpillar scraper was used for canal cleanup, finishing, and sloping. A Caterpillar-D-4 mounted Traxcavator proved useful in structure excavation and backfilling. Embankments were compacted by a sheepsfoot drawn by a Caterpillar D-8 tractor and preceded by a 1½-ton International 1200 gal. water truck.

The contract calls for 15 major structures, including one large siphon and several turnouts, drops, checks, and two bridges. The siphon, a 368-ft. long circular concrete pipe ten feet in diameter and laid in a "U" shape, presented a ticklish construction problem. Located in a wasteway flowing into a small creek, work on this unit had to be carefully timed to avoid the heavy flash floods present at this location even during moderate rainfalls.

All aggregate had to be obtained at Riverton, inasmuch as suitable deposits were lacking in areas nearer the job site. This necessitated a 30-mile one-way haul for 5-yd. International trucks which pounded a steady beat along the highway from the crusher (owned by a Riverton contractor) to the control stockpile, six miles north of Pavillion.

Concrete equipment included three Euclid-mounted 4-yd. Rex and Jaeger mixers. Use of transit mixers eliminated the necessity for stockpiling of aggregates at each structure site. The one stockpile was established at the approximate center of the project, along with the batching plant, cement shed, and water tanks.

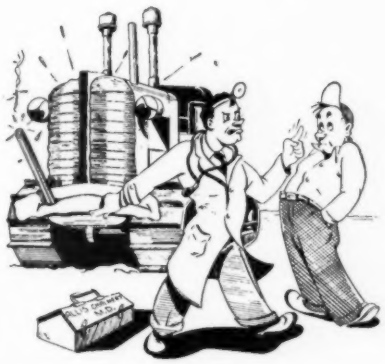
Tom Clark, veteran Bureau engineer, is in charge of the entire Riverton project and is assisted by a battery of "know how" Reclamation engineers and inspectors. Superintendent and office manager, respectively, for Morrison-Knudsen are Grant Ferre and Fred Webber.

"That's just what I predicted your new shovel would do!"

Tractor Winterization Tips

Each year, winter's relentless fury sabotages the cooling systems of tractors not serviced and protected to resist the elements' annual onslaught. Here are "winterization" suggestions to contractors and highway officials anxious to maintain their construction schedules in spite of winter weather.

By Allis-Chalmers Service Department



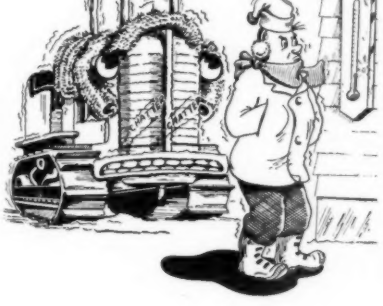
ONE of the most important factors in cold-weather tractor operation is maintenance of normal operating temperature. It is advisable to use a permanent, ethylene glycol antifreeze solution because it has a boiling point higher than 185°F. You can then keep your engine at normal operating temperature of 160° to 185°F. without loss of cooling system solution. A mixture of three parts permanent antifreeze and two parts water will provide maximum protection against freezing. Test the solution periodically to make sure it is strong enough for protection against the prevailing temperatures.

The thermostat keeps the engine operating temperature at 160° to 185°F. Be sure the thermostat is in good working order. Install a new thermostat and gasket if you are in doubt.

If your tractor is equipped with a radiator shutter, use it to assist in maintaining the proper engine operating temperature. Get a radiator curtain if you don't have the shutter. Good side plates are a great help in keeping the engine warm.

When changing oil at temperature readings of 32°F. or below, use the SAE number recommended in the manufacturer's service manual. Too frequently, oil that is too heavy in cold weather will cause such a drag on the starting motor that the engine will not start even though the battery is in excellent condition.

The fuel you used last summer may be a little heavy for winter operation. Be sure the pour point is low enough to permit it to flow freely under the prevailing operating temperatures. For cold weather operations it has been found that lighter fuels such as no. 1 diesel have a lower pour point and the octane number is higher along with a low distillation end point. These are the things which determine easy starting and clean burning. See your favorite oil man. He can fix you up.



After you get the proper fuel, keep it clean and don't forget to drain those sediment sumps under the fuel tank every night before you leave the tractor.

Check all electrical connections and wiring to make sure they are in good condition. Be sure the generator is charging properly. Batteries are used much harder during the winter months and must be kept in good condition to prevent freezing. Here are some items to keep in mind:

1. Keep tops of batteries clean.
2. Electrolyte should cover cell plates.
3. Check battery reading at frequent intervals.
4. In temperatures below 32 degrees, the specific gravity reading should not be allowed to go below 1.250.

Prolonged idling during cold weather results in low engine temperature. This will affect normal operation and damage operating parts. Some of the results of prolonged idling and low engine temperatures are: dilution of lubricating oil, lacquer or tar-like deposits on valves, pistons and cylinder liners causing abnormal engine wear and poor performance.

When the engine is started, it should be brought up to proper operating temperature and maintained during the time tractor is in operation.

Don't forget to cover the exhaust pipe at night.

Clean the mud and snow out of the tracks and truck wheels and from the support rollers before leaving the tractor at night. Then park it on solid ground to prevent it from freezing down. A lot of dirt and snow will fall off if you run it back and forth a few times in a cleared solid place.

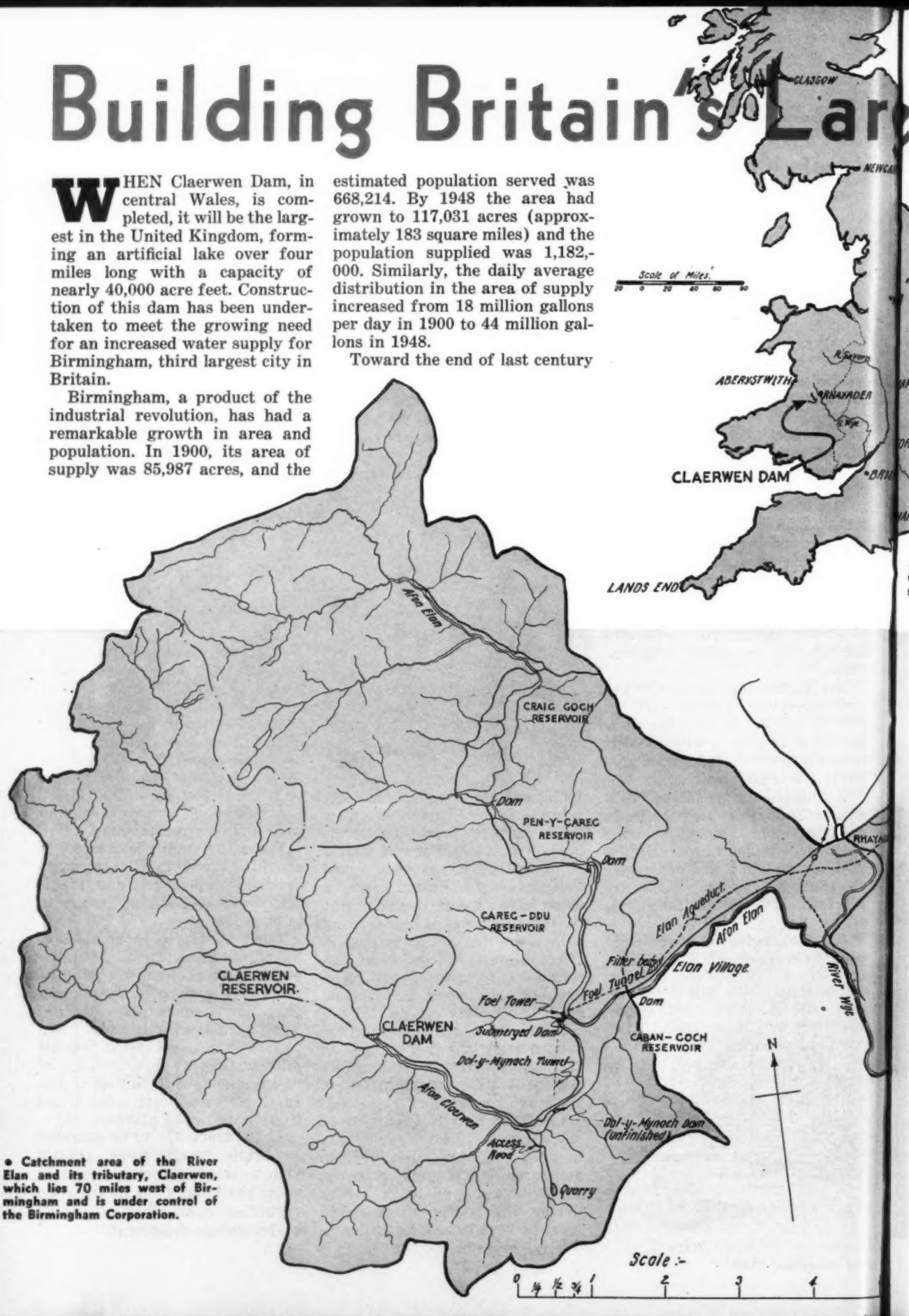
If the tractor is to be operated in Arctic temperatures, consult your nearest authorized dealer or write the factory for information regarding availability of special cold weather equipment.

Building Britain's Lar

WHEN Claerwen Dam, in central Wales, is completed, it will be the largest in the United Kingdom, forming an artificial lake over four miles long with a capacity of nearly 40,000 acre feet. Construction of this dam has been undertaken to meet the growing need for an increased water supply for Birmingham, third largest city in Britain.

Birmingham, a product of the industrial revolution, has had a remarkable growth in area and population. In 1900, its area of supply was 85,987 acres, and the estimated population served was 668,214. By 1948 the area had grown to 117,031 acres (approximately 183 square miles) and the population supplied was 1,182,000. Similarly, the daily average distribution in the area of supply increased from 18 million gallons per day in 1900 to 44 million gallons in 1948.

Toward the end of last century



• Catchment area of the River Elan and its tributary, Claerwen, which lies 70 miles west of Birmingham and is under control of the Birmingham Corporation.

st Dam

By PETER A. SCOTT, B.Sc.

The author, a member of Britain's Institution of Civil Engineers, is in charge of construction at Claerwen Dam. He is a partner in the engineering firm of Sir William Halcrow, which is responsible to the Birmingham, England, Water Department for this project.

• Sketch map of Britain shows location of Claerwen Dam, 70 miles west of the consumer of its water, Birmingham.

— as the demand for water was approaching the 20 million gallons daily capacity of the supply obtained from local streams and wells — the Birmingham Corporation obtained control of the catchment of the River Elan and its tributary, Claerwen, in central Wales. This area lies about 70 miles west of the city and is sufficiently high to feed by gravity a large part of the area of supply.

Mountainous Terrain

The gathering ground of 71 square miles consists of mountainous terrain, between 700 and 2,115 feet in elevation, comprising slates, grits and conglomerates of the lower silurian order overlaid by peat and clay. The long-period average annual rainfall is 69.4 inches and the reliable collectable yield is not less than 102 million (Imperial) gallons daily, of which 75 million gallons was designed ultimately for supply and 27 million gallons for compensation water to riparian interests.

The original scheme envisaged six reservoirs, three on each of the Rivers Elan and Claerwen, with a gross storage capacity of 66,225 acre feet. Those on the river Elan only were constructed and brought into use in 1904, having a gross storage capacity of 41,115 acre feet. After screening, rough filtration and the addition of lime, the water gravitates through an aqueduct 73½ miles long, discharging into storage reservoirs at the city boundary and having a total capacity of 2,575 acre feet.

A unique feature of the existing works is the provision within the lowest of the three reservoirs of a submerged dam carrying a roadway viaduct. Its crest is 40 feet below top water level, and its purpose is to maintain the water level on its upstream side above the inlet level of the aqueduct while allowing the water on its down-stream side to be drawn down for compensation water.

Without the submerged dam, 9,460 acre feet stored down-

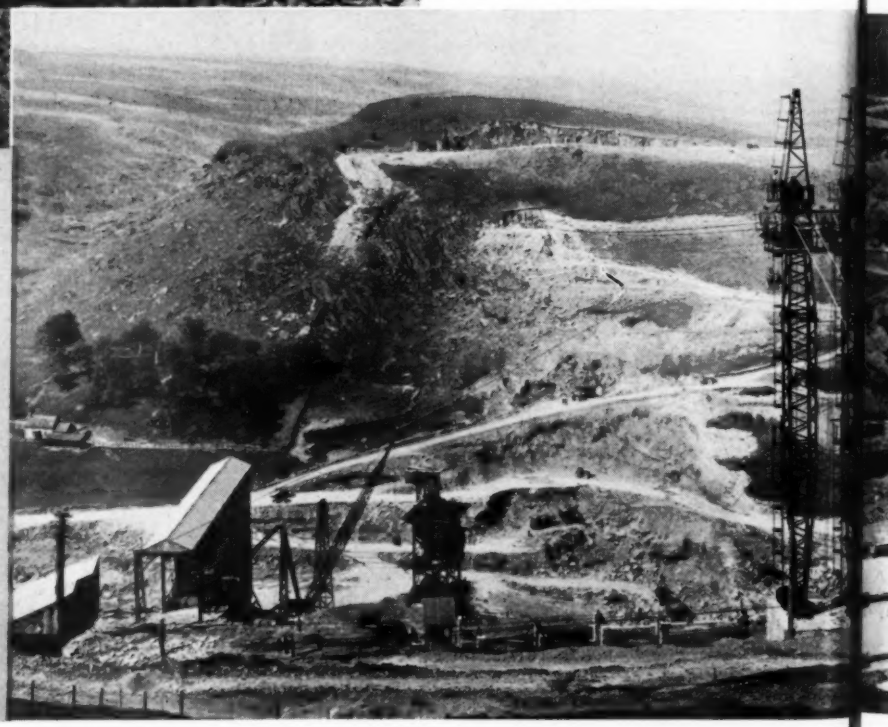
Construction of Claerwen Dam in central Wales has been undertaken to meet the growing need for an increased water supply for Birmingham, third largest city in Britain. Excavation will run to three quarters of a million yards.

• Below: 1¼-yd. Ruston-Bucyrus 33-RB shovel loads rock to a 10-ton FWD dump in the main foundation of the dam.

stream of that dam and below its crest could not be used at all. Under existing conditions, however, when reservoir level falls to the crest of the submerged dam, water from its downstream side may continue to be drawn for compensation while the level upstream is maintained above aqueduct inlet by discharging water from the two reservoirs higher up the River Elan and by diverting the waters of the River Claerwen by way of a tunnel through the hillside which discharges upstream of the submerged dam.

Work Started in 1946

The drought of 1937 made it evident that further development of storage capacity would be necessary. Powers were obtained under the Birmingham Corporation Act of 1940 to vary the earlier scheme by the construction of one dam on the River Claerwen in place of the three originally proposed. Owing to the war, it was not possible to proceed with this project and the order to start work was not given until 1946. The new reservoir will have a greater capacity than that of the three originally intended combined, increasing the gross storage capacity to 81,100 acre



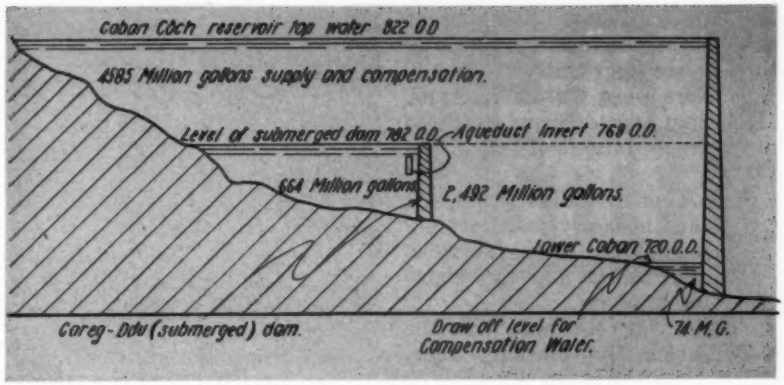
• **Above: Workmen drill 1¾-in. x 4 to 6-ft. blast holes with Ingersoll-Rand JB-5 and CP-42 Jackhamers in the main foundation.**

• **Right: Looking west over the site from above the site of the east abutment. Cement silos and concrete plant are in foreground.**

• **Large Photo, Opposite Page: View of site and cableway foot towers from the west abutment (looking east).**

• **Far Right, Opposite Page: Close-up of method used to drill horizontal blast holes in the main foundation. Ingersoll-Rand Jackhamers are laid on planks and controlled by feet of operators. Man at left of photo has even rigged a backrest.**

• Diagram shows function of submerged dam within main reservoir explained in this article.


Coban Coch reservoir top water 822 O.D.
4585 Million gallons supply and compensation.
Level of submerged dam 782 O.D.
Aqueduct Invert 768 O.D.
664 Million gallons.
2,492 Million gallons.
Lower Coban 720 O.D.
Coreg-Ddu (submerged) dam.
Draw off level for Compensation Water.
Tal M.G.

feet, of which 95 per cent will be usable.

Claerwen is a concrete gravity dam, curved in plan to 2,000 feet radius, 184 feet high from stream bed to crest and 1,066 feet long at top water line. The lower part of the upstream face will be of Staffordshire engineering bricks and the upper part of that face and the whole of the downstream face will be of squared rock-faced gritstone masonry. Hearting concrete will have six inches maximum size aggregate in proportion of seven parts to one of low-heat cement. The dam is divided into 23 radial blocks about 46 feet 6 inches long, to be constructed alternately. The contraction joints between blocks are made watertight by continuous vertical copper strips ⅛ inch thick.

The overflow situated centrally will be 540 feet long with an estimated discharge of 5,000 cu. ft. per second at three feet depth over the reservoir spillweir. A 12-ft. roadway flanked by 3-ft. 6-in. footpaths will cross the dam and spillweir on 13 reinforced concrete arches, six of 40-ft. clear span on each side of a central span of 60 feet. The crest level under the central arch will be six inches lower than that under the remaining arches, so that normally the flow will be under the central arch only and down the face of the dam, which in this portion is to be built in a series of steps between substantial buttresses. During floods, the flow under the remaining arches will be guided by training walls at the foot of the dam into a stilling pool with measuring weir, and thence into the original river course.

Steel Draw-Off Pipe

Draw-off at two levels is provided by 48-in. diameter pipes and controlled by needle valves, guarded by sluice valves. Scouring from a lower level is provided for by two 36-in. diameter pipes. The pipes are of steel with concrete lines, and laid in two tunnels through the dam.

The foundation, which will be of 180 feet maximum width, is to be taken 10 to 15 feet into sound rock at the downstream toe and sloped down therefrom at one in 24 toward the upstream side where a cut-off trench will be excavated. With a maximum width and depth of 15 feet below the main foundation, the trench will be reduced to six feet at the ends of the dam. Grouting with neat cement in stages of 10 to 15 feet will be carried out below the bottom of the cut-off trench at pressures up to 1½ times the static head with full reservoir, to seal any fissures in the rock.

Uplift pressure will be relieved by a drain below main foundation connected by vertical pipes to two longitudinal galleries in the dam. The whole work will involve excavation of 160,000 cu. yds. of material (mostly rock), placing of 380,000 cu. yds. of concrete

and masonry, and quarrying of 560,000 tons of rock for crushing to concrete aggregate.

Tenders were invited in April, 1946 from selected firms for three alternative forms of construction:

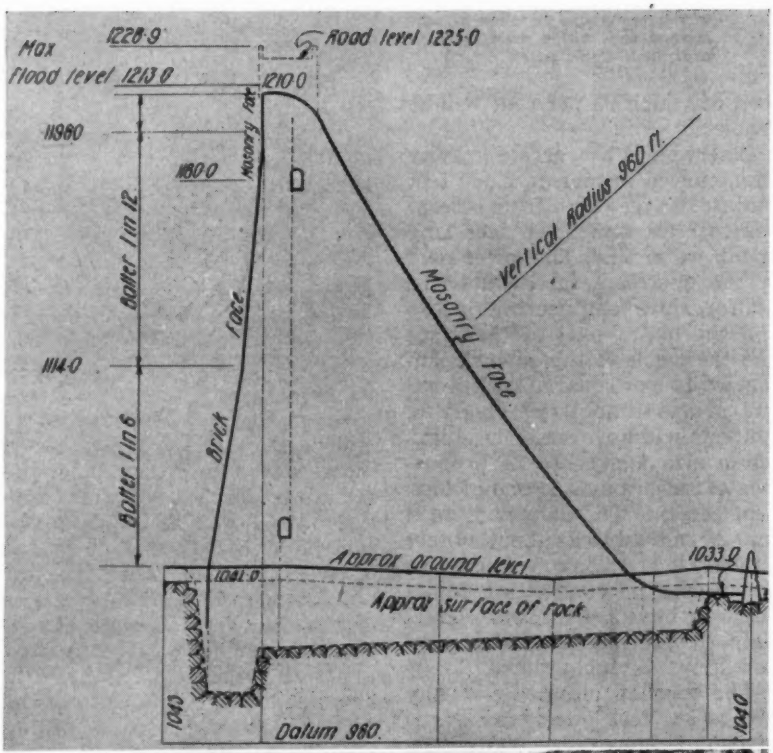
(a) A concrete dam with brick and masonry faced precast concrete block facework and ashlar masonry above crest level.

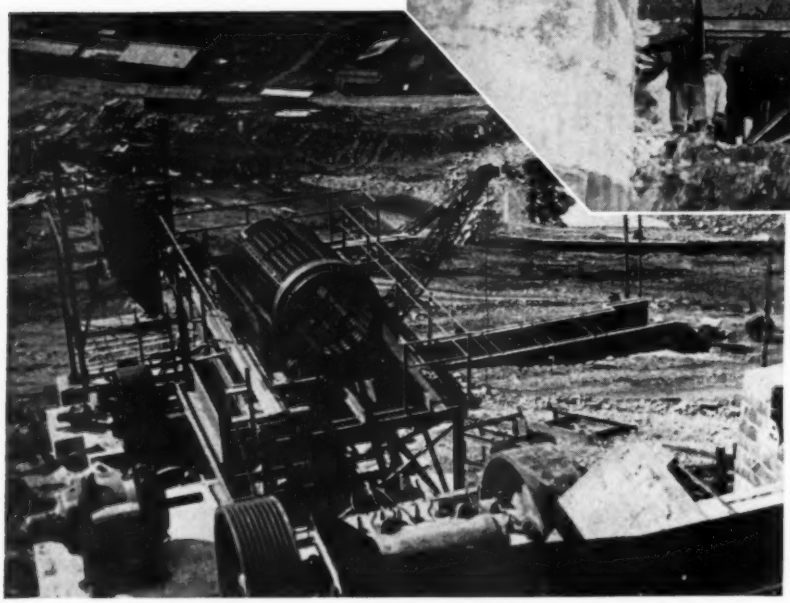
(b) A concrete dam with the brick and masonry facework built in situ.

(c) A concrete dam with the downstream facework in plain concrete, the brick and masonry above crest level as above.

The lowest tenders of £1,494,440 ($5,977,760); £1,464,394 ($5,857,576) and £1,392,800 ($5,571,200), for (a), (b) and (c) respectively were submitted by Edmund Nuttall, Sons & Co. (London) Ltd., 22 Grosevenor Gardens, London, S. W. I. England, and their tender for type (b) construction was accepted in June, 1946 for completion in 60 months, active work on the site being started in August, 1946. At the time of writing, erection and assembly of the large installation of concreting and rock crushing plant and access to the quarry is nearing completion, and excavation of the foundations is proceeding.

(Continued on page 60)





• **Top: Typical cross-section of Claerwen Dam. With its 184-ft. height above stream bed and 1066-ft. length, this will be the largest dam in Britain.**

•

• **Above: This early photo shows installation of secondary crushers. Foundations for kubits are in background.**

•

• **Left: Primary crushers and rotary screen of crushing plant.**

PENBROOK GETS *TWICE* THE SERVICE FROM J&L *Precisionbilt* WIRE ROPE

J&L STEEL

....average life jumps from 382 hours to 805 hours, removing 100% blasted rock!

The J&L Precisionbilt *wire rope used for the dragline on this machine: 1¾" diameter, 6x19 Type "U", Lang Lay with independent wire rope center.*

RECORDS kept by Penbrook Contracting Company over a period of 20 months on an anthracite strip-mining job near Ashland, Pa., show that J&L *Precisionbilt* wire rope has given more than *twice* the service life of two major competing brands.

Average life of 9 brand "A" wire ropes:	**397.6 hrs.**
Life of 1 brand "B" wire rope:	**240 hrs.**
Average life of all 10 wire ropes:	**381.8 hrs.**
Average life of 6 J&L Precisionbilt wire ropes:	**805 hrs.**

As a result of this performance, Penbrook now uses a variety of J&L ropes on its 21 draglines and shovels engaged in two hard coal stripping operations in Schuylkill County, Pa., and six soft coal jobs in Clearfield County, Pa.

This is a typical example of a quality product, correctly applied and properly handled—a combination without which this advertisement could not have been written.

There is a J&L *Precisionbilt* wire rope for every purpose. Why not make your own comparison. We'll gladly send you wire rope service-record cards and a transparent holder *free*.

Jones & Laughlin Steel Corporation
429 Jones & Laughlin Building
Pittsburgh 19, Pa.

Please send me a supply of wire rope service-record cards and transparent holder.

NAME_____

COMPANY_____

ADDRESS_____

JONES & LAUGHLIN STEEL CORPORATION

PRODUCTIVE INTERNATIONAL POWER *Pays Profits*

Grading 11.8 miles of farm-to-market roads required moving 205,000 yards of earth. Here's a job that demanded dependable, productive earthmoving power. Chosen for the task—six International TD-18 Diesel Crawlers, one International ID-9 Diesel wheel tractor, two International-powered graders and an International-powered self-propelled scraper.

Here's another example of what contractors are discovering every day—it's wise to standardize on International Power. It pays off in lower operating and maintenance costs and in *more work done in a shorter time.*

Discuss your earthmoving problems with your International Industrial Power Distributor. He'll show you how International tractors and International-powered earthmoving equipment will put more profits in your pocket on any earthmoving job.

Industrial Power Division
INTERNATIONAL HARVESTER COMPANY
Chicago 1, Illinois

The International UD-18A engine is the power plant in the TD-18 Crawler. This dependable Diesel is one of a line of six Diesel and four carburetor-type International Power Units. Whatever your power and equipment needs may be, specify International engines for all your requirements. Productive International Power is the key to greater profits.

Tune in James Melton on "Harvest of Stars" CBS Wednesday evenings

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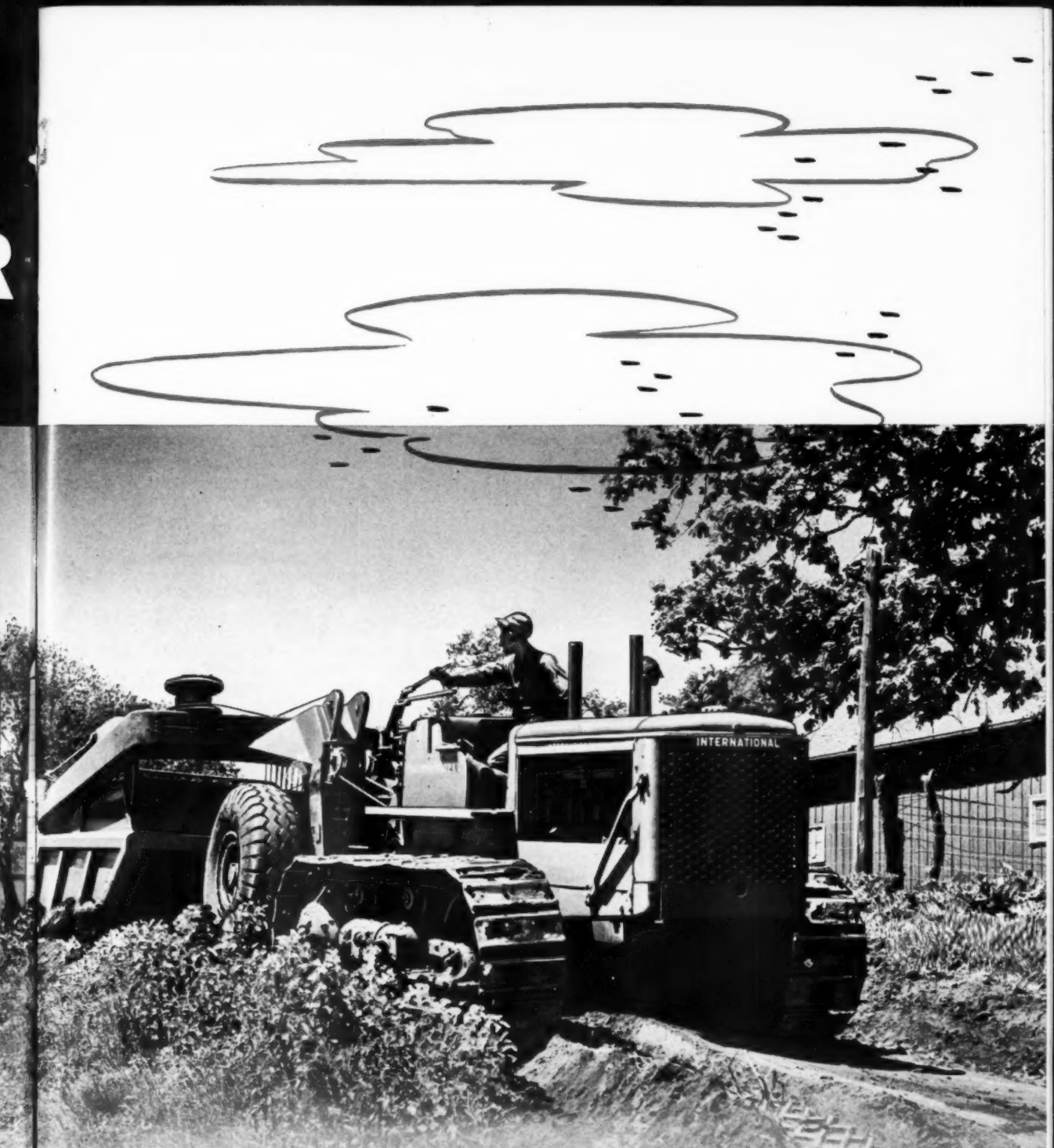

INTERNATIONAL HARVESTER

Industrial Power

Field NOTES

Gear Maintenance

Usually when the gears of excavating machinery break down before their time, the reasons can be traced directly to avoidable factors. Here are a few maintenance suggestions that will help extend gear life:

Avoid abuse. Overloads on machinery units place dangerous stress on the gears which control the equipment.

Refrain from operating machinery at abnormally fast speeds. Gears deteriorate at the excessively high temperatures brought on by sustained, unusually fast operation.

Use proper oils. Correct lubrication is a must, because metal-to-metal contact brings scoring and galling of gears. Make sure the oil used isn't too light.

See that the shafts on which the gears ride are aligned. Misalignment causes extra wear on one side of the gear tooth and leads to complete gear deterioration.

Avoid repetitive shock loading or hammer action. These cause pitting and breakdown of gears.

Protect gears from dust. Heavy dust conditions in the air surrounding operating gears shorten gear life.

Keep gears clean. Clean gears last longer, run smoother, and are generally more efficient.

Protect gear lubricants against contamination in service. A contaminated lubricant can tear apart any gear.

See to it that the specified lubricants are applied to open gearing frequently and in the prescribed quantities.

Ernest W. Fair

New Use for an Old Tire

At Butler Brothers' South Agnew conveyor-dragline stripping installation on Minnesota's Mesabi iron range (See story on Page 22), a bothersome maintenance problem was solved by the ingenious use of discarded worn-out tires from the firm's fleet of Euclid trucks.

The problem involved the hoppers at the conveyor transfer points. Sand discharged from a 48-inch belt travelling at 550 feet per minute, was wearing through the plates of the hopper backwalls in a matter of days.

After numerous remedies—such as installing plate baffles—had been unsuccessfully tried, the maintenance superintendent hit upon the idea of splitting old truck tires in half and hanging them against the hopper backwalls.

The idea paid off! The tires act as shock absorbers and also hold a cushion of dirt against the backwalls. There have been no conveyor shutdowns due to backwall wear since their installation.

Boulder Blasting Test

When a 25-cu. yd. dragline loads overburden directly to the world's largest mobile screening plant, certain special problems arise, it was discovered by Butler Brothers at their South Agnew stripping project on the Mesabi iron range. (See story on Page 22). One of these problems is concerned with the ever-present chance that large boulders may be fed to the hopper and become fixed in the 6-ft. opening leading to the screening plant. This would result in a long shutdown while hopper walls were dismantled to free the boulder.

In searching for a method that would free a boulder quickly and eliminate costly hopper alterations, Butler Brothers consulted with Du Pont engineers, and a blasting test was conducted at the South Agnew Job site.

It was decided to try and crack a sample boulder with Du Pont jet perforators, shaped charges containing Pentolite, an explosive used in oil fields to perforate casing. Five of these small shaped charges, strung across a corner of the boulder, were detonated. They cracked off the corner, putting down individual holes up to an inch in depth.

Butler Brothers engineers agreed that the experiment showed promise as a method for breaking up boulders in close quarters—as in the screening plant hopper—quickly and with lessened danger of harming surrounding equipment.

• The boulder-blasting experiment at Butler Brothers' South Agnew stripping installation is illustrated below. At left, Butler and Du Pont engineers select a large boulder down inside the pit. Center view shows the placement of the five shaped charges. Picture at right shows the boulder after blasting, with one corner cracked loose.

Everything You Need in Tractor Equipment..

. . . for lowest cost dirt moving with International Crawler Tractors

FROM big 22-yard scrapers on down to tamping rollers . . . Bucyrus-Erie offers you a complete line of equipment for use with International Crawler Tractors. Here is everything you need to cut down on dirt moving costs — all engineered and built by the manufacturer with more than 68 years of experience in the dirt moving game. When you buy Bucyrus-Erie tractor equipment, you get the toughest, most productive units on the market!

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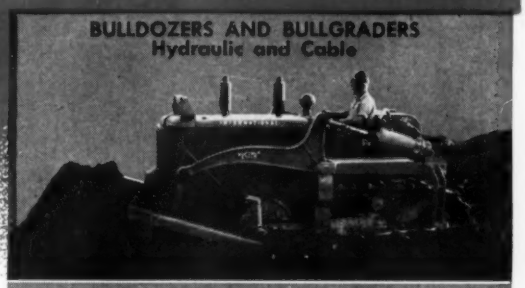
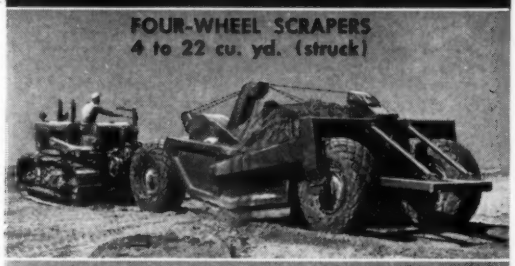
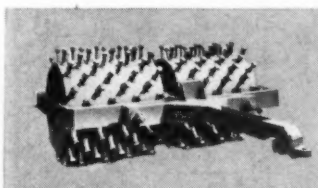
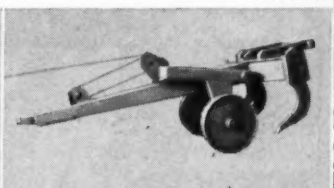
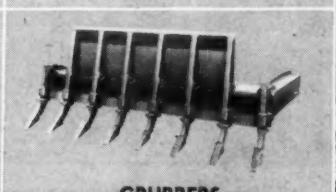


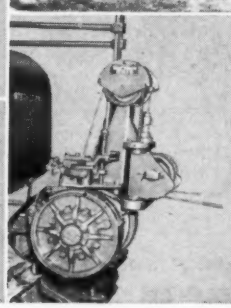



TAMPING ROLLERS


CABLE RIPPERS

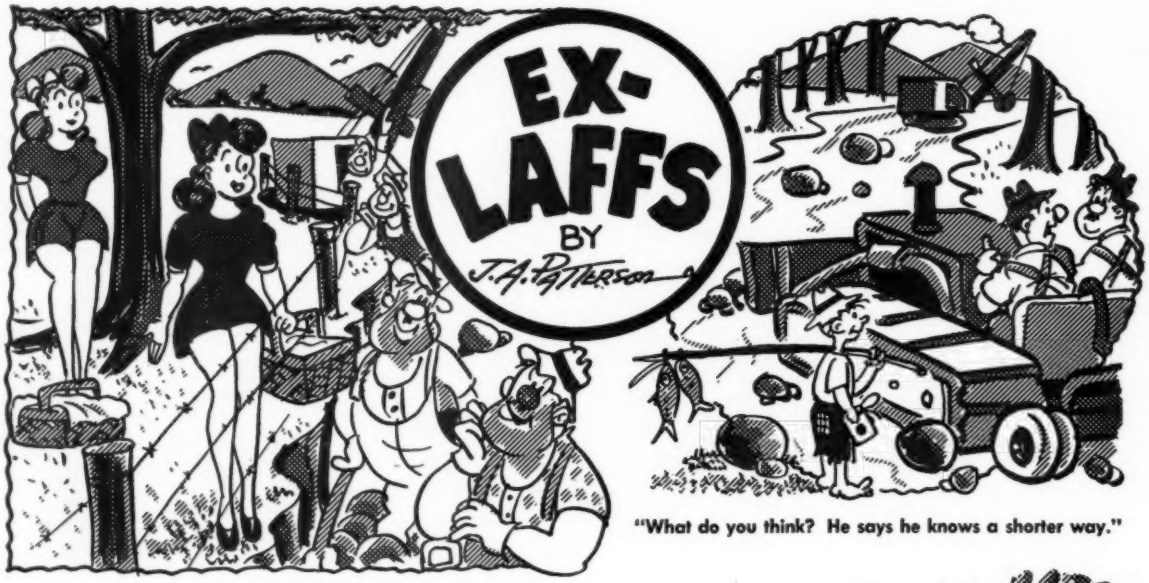
TRACTOR CABS


GRUBBERS



Single and Double Drum POWER CONTROL WINCHES

Front or rear mounted



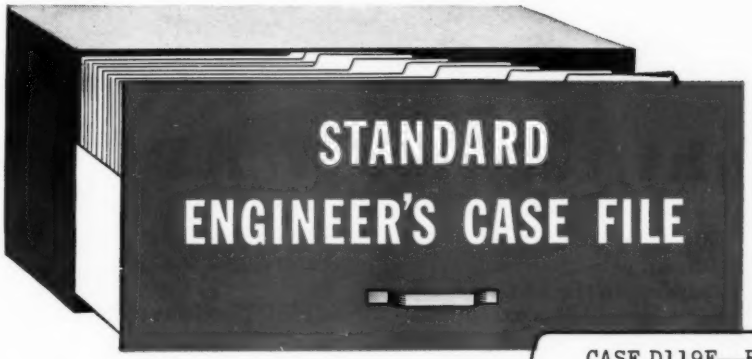
"Gentlemen, it won't disturb your work if we have our picnic here, will it?"

"What do you think? He says he knows a shorter way."

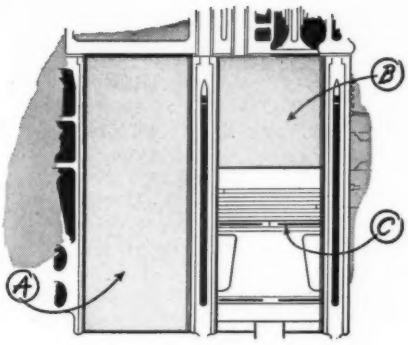
"Judson's really walking on air today!"

"Whatta ya mean: Hot dog! Hot dog! Hot dog! Just how many do you want?"

"Maybe you'd better put some of that dark brown face-powder on him to make him look like he's been working".



CASE D119E—REDUCING WEAR ON LINERS IN DIESEL ENGINES



DIESEL ENGINE LINERS AND PISTON

In high-speed Diesel engines lubricated with RPM DELO Diesel Engine Lubricating Oil, wear on liners was held to a minimum with little variation over their entire areas. A constant lubricating film was maintained on them even in high-temperature belts. RPM DELO Oils are recommended for all types of Diesels. Come in all viscosity grades necessary for your engines.

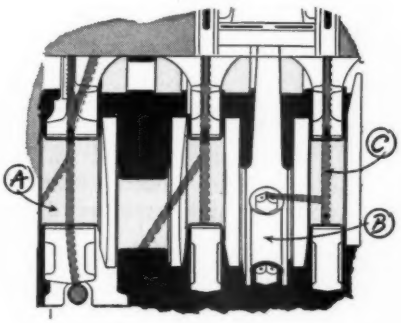
A. Special additive provides metal-adhesion qualities...keeps oil on all parts whether hot or cold, running or idle.

B. An anti-oxident resists formation of lacquer—resistance to extreme heat provides lubrication in the toughest conditions.

C. Contains detergent which keeps rings clean and operating freely...prevents scratching and gouging of liners.

RPM DELO Diesel Oil will not corrode any bearing.

CASE D119F—PROLONGING THE LIVES OF BEARINGS IN DIESELS



SECTION OF DIESEL ENGINE CRANK AND CAM

No bearing failures occurred between overhaul periods in Diesel engines used in the toughest service when they were lubricated with RPM DELO Diesel Engine Lubricating Oil.

A. Non-corrosive to all types of bearing metal...inherent ability of base stocks and added compound resist oxidation and formation of acid which is common cause of bearing corrosion.

B. Maintains a tough lubricating film which withstands excessive shocks and pressures.

C. Special detergent compound keeps oil passages clean and open - allows free flow of lubricant to vital points.

Another compound in RPM DELO Oil prevents foaming of the oil. An accurate measurement of crankcase levels can always be obtained.

For additional information and the name of your nearest Distributor, write

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El Paso, Texas

DIESEL ENGINE RPM DELO LUBRICATING OIL

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Equipment
you ought to KNOW ABOUT

Conveyor Belt

Manufacturer: Hewitt Rubber Division, Hewitt-Robins, Inc., Buffalo 5, New York

Claims: A new high-tension fabric conveyor belt called Raynile, for jobs where belt tensions run as high as 1,000 lbs. per inch of width, has just been announced.

According to the manufacturer, the strength-material consists of a combination of rayon and nylon, offering greater strength than the standard types of cotton woven fabrics or cotton cord belts. Reinforcement of Raynile fabric belts is accomplished by use of plies of rayon and nylon fabric suitably bonded to each other.

Model H3 Hydrocrane

Manufacturer: Bucyrus-Erie Company, Hydrocrane Division, 7923 West Greenfield Avenue, Milwaukee 14, Wisconsin

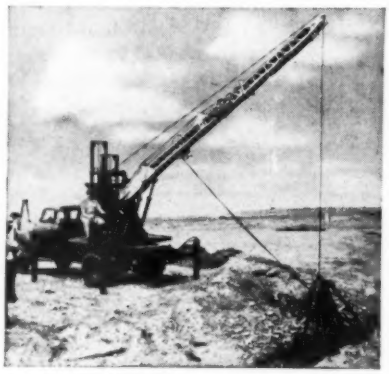
Claims: Production of a new 3-ton capacity Hydrocrane — the Model H3 — has just been announced. Big brother to the 2-ton capacity Model H2, the new unit is designed for the economical handling of small jobs on which the use of a conventional crane-excavator would prove too expensive.

Simplicity is a key characteristic of the Hydrocrane. Full hydraulic operation of the crane (powered by truck engine, governor-controlled to run at the middle of its normal speed range) eliminates shafts, drums, gears, clutches, brakes, chains, and sprockets . . . is easy to maintain. All functions, including the closing action of the 3/8-yd. clamshell bucket, and the 370 degree swing, are hydraulically controlled.

Operation is simple because there is no need to synchronize hand and foot motions. Safety is promoted, because there are no clutches or brakes to slip; hydraulic control is positive and precise. Furthermore, it is stated that the nature of hydraulic operation makes the machine almost weatherproof. Lacking clutches or brakes, it operates equally well in 100-degree and sub-zero temperatures.

According to the manufacturer, the 3-ton Model H3 is exceptionally mobile. Supplied as a complete package, factory-mounted on a new motor truck, it can travel at fast highway speeds from one job to the next . . . set up for work in a hurry on its hydraulic outriggers.

A unique feature that is said to boost H3 Hydrocrane field performance is its all welded box section latticed boom which raises and lowers and telescopes (from



18 to 26 feet) hydraulically. This makes possible fast, accurate spotting of loads . . . enables the operator to reach into box cars, over walls of piling, or into buildings.

Sturdily constructed, with permanently lubricated anti-friction bearings, the H3 weighs 9,375 lbs. without truck. When truck-mounted, its overall length in traveling position is 24 feet 6 inches; overall height is 10 feet 6 inches.

The manufacturer claims that the unit, working with hydraulically controlled attachments — clamshell bucket, material handling bucket, trash or snow bucket, orange peel catch basin cleaner, grapple—or as a lifting or magnet crane, can provide versatile service to general contractors, loggers, excavating contractors, pipe line contractors, municipalities, scrap yards, manufacturers, road builders, gravel pit operators, and many others.

"Haiss" Conveyor Line

Manufacturer: George Haiss Co., Inc., New York 51, New York

Claims: The introduction of a completely new and re-designed line of Haiss conveyors, car unloaders, and loaders has just been announced.

The Haiss line now includes: Model 481 flat belt conveyor; Model 482 trough conveyor; Model 483 belt type car unloader; Model 484 drag type car unloader; Model 485 freight and package conveyors; Model 486 medium and heavy duty drag type conveyors; Model 75 crawler and wheel type heavy duty bucket loaders, snow loaders, and clamshell buckets.

"FWD" Truck

Manufacturer: The Four Wheel Drive Auto Company, Clintonville, Wisconsin

Claims: A new model in the FWD line of four and six-wheel drive trucks was recently announced. Rated at 33,000 pounds gross vehicle weight, the truck is newly designed and newly engineered throughout.

Called the "ZU," the new truck is the first in the company's line to feature a new all steel cab which provides 30% greater visibility and increased driver comfort.

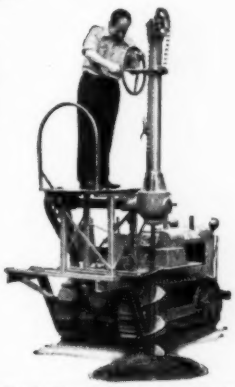
Heavy diamond steel plating on top of the truck's skirting and the fender provides a solid catwalk type of support to be used by servicemen in adjusting the engine. Skirting and bumper are readily removable, leaving a clean front end for the mounting of snow plows and other front-mounted accessory equipment.

The frame of the new model "ZU" is a 10" x 3" x 1/32" heat treated channel steel with welded and reinforced front cross-mem-

The NEW Crawler with Postwar Features

USTRAC AROUND THE WORLD

Shown here with 5-ft. bulldozer and double hydraulic controls that develop 800 lbs. per sq. in. working pressure. Dozer lifts 15" and lowers 6¼" below grade.



USTRAC "Speedigger" post hole digger. Easy to attach. Digs all size holes to desired depths. Thousands of "Speediggers" in use — fully proved.

Extra Power and Performance for Your Money

USTRAC is the direct descendant of the famous wartime Clark Airborne Tractor, designed and tested for heavy-duty peace-time work — small but atom-packed with power, 20 h.p. at the drawbar from the 4-cylinder Continental gas engine. Unmatched fast performance — 4 speeds forward, 4 reverse; speeds from .98 m.p.h. to 8.03, with instant reverse lever (no reverse gears to shift), a work-wonder on backfilling and dozing. Only 37" wide, 92" long, USTRAC turns on a dime, gets in and out of narrow places that block a big tractor, is moved swiftly from job to job on any truck. Besides, it cuts fuel costs as much as 50% on many jobs. You simply can't beat the USTRAC for getting a lot of work done fast, easily and at low costs. See your nearest dealer now — or write at once for full information.

U. S. Tractor Corporation

WARREN, OHIO, U. S. A.

Heavy-duty power winch — shown here winching a log 32 inches in diameter. 3-ton pulling capacity — cable-drum holds 325 ft. of ⅜" cable.

Handy Attachments for 100 Jobs

Hydraulic Power Control

Hydraulic Angle Dozer — 5-ft. Bulldozer

3-Ton Power Winch — Belt Pully Winch

Post Hole Digger

Pull Type Grader — 2-Wheel Terracer

Snow Plow

2-Wheel Wood Box "Low-Boy" Trailer

ber providing a strength factor more than 200% stronger than any previous FWD model.

Front and rear axles of the "ZU feature 17" spiral bevel, ring gears, and pinions for strength and quietness. A newly designed "S" type constant mesh transmission with helical gears and easy sliding jaw clutches for easy shifting and quiet operation is provided.

The new truck is powered by the 140 "GZ" 554-cubic inch high compression gasoline engine. It develops 188 horsepower at 2,600 r.p.m. governed speed and 460 foot pounds of torque at 1,000 r.p.m.

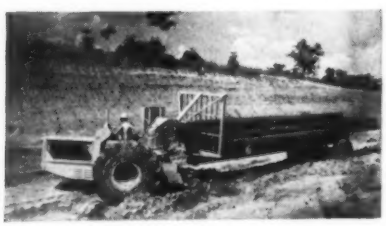
Plate-Type Conveyor Belt Fasteners

Manufacturer: Armstrong-Bray & Co.; 5364 Northwest Highway, Chicago, Illinois

Claims: A new line of fasteners and repair plates for heavy duty conveyor belts is now in production. So designed that they can be applied anywhere, these Plategrip belt fasteners are said to pull belt ends together into a smooth, flexible tight joint. Made of heavy gauge steel, they are engineered to withstand any load the belt can safely carry.

These fasteners are provided for belts from ¼" to 1½" thickness and packaged in sets of ten of a size to a box.

"TH-4" Tournahauler



Manufacturer: R. G. LeTourneau, Incorporated, Tournalayer Division Longview, Texas

Claims: A new piece of material hauling equipment, the "TH-4" Tournahauler is now in production.

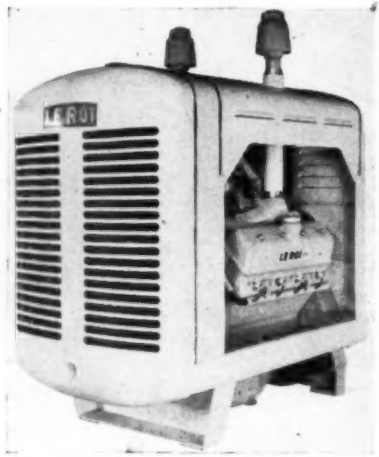
Designed to haul heavy length loads, this machine is said to incorporate operating characteristics that enable it to travel both off the road and on highways. Features that make for versatility of movement are the Tournamatic torque proportioning differential, electric power steer, proper distribution of the load on both front and rear wheels, elimination of exposed springs and other vital assemblies under the frame. Extra large, low-pressure tires provide superior flotation.

V-8 Le Roi Engine

Manufacturer: Le Roi Company, 1707 South 68th Street, Milwaukee 14, Wisconsin

Claims: Newest of the Le Roi line of engines is the "H-540", a V-8, valve-in-head unit capable of speeds up to 1800 R.P.M.

Designed to meet high speed requirements, the "H-540" is said



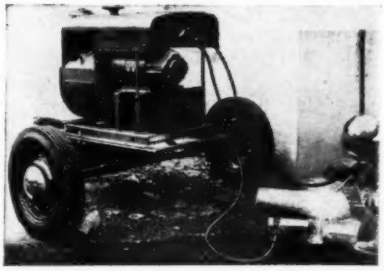
to provide smooth power throughout the speed range with horsepowers rated up to 135.

According to the manufacturer, the "H-540" is compact and light in weight despite the horsepower range, and has the strength to withstand the strains of continuous heavy duty service.

The "H-540" runs on gasoline, butane or natural gas. Valve-in-head design simplifies maintenance by providing greater accessibility.

Features incorporated in the "H-540" engine are: removable, wet-type cylinder sleeves; extra-heavy, counterweighted crankshaft; unit construction of crankcase and cylinder block; water-cooled manifolds; full-pressure lubrication; gear-driven water pump; cam-ground aluminum pistons; and push button electric starting.

Light-Weight Welder



Manufacturer: General Electric Company, Schenectady, New York

Claims: A new light-weight engine-driven, d-c welder, designed for a wide range of general applications, has just been announced. Weighing 660 pounds for a maximum of 250 amperes of welding current, the new welder is said to be easy to transport on a pick-up truck, leaving ample truck capacity for other equipment.

It is powered by a Wisconsin "VF-4" air-cooled engine, speed-ratio-coupled by a steel-core V-belt to a G-E "WD-3200" generator with 50 per cent duty cycle. Fully calibrated dual control permits the accurate setting of a desired welding current before arc is struck.

The welder has a built-in auxiliary power outlet of 110 volts for the operation of lights and power tools, and stands on a full-length, rigid, welded steel base.

For greater portability, the unit can be furnished mounted on a two-wheeled, pneumatic-tired trailer.

Lorain Moto-Crane

Manufacturer: Thew Shovel Company, Lorain, Ohio

Claims: Said to be able to lift and transport much heavier loads than could previously be handled by a rubber-tired crane, the new 45-ton capacity "MC-820" Moto-Crane can be used in steel mills, steel erection, ship building, bridge building, logging, oil fields, and any other industries where the handling of heavy materials is an essential operation.

Weighing 65 tons, the new moto-crane has the following overall dimensions: length, with boom in travel position over front of carrier, 66 feet, 5 inches; width, 11 feet, 7¾ inches; height with gantry erected 19 feet, 5 inches, with gantry lowered 14 feet.

The "MC-820" is made up of the

IT'S THE FIRST!

HOUGH
model HM
PAYLOADER
PATENT 2,413,333

4 Wheel Drive Tractor Shovel

FEATURING . . .

1 ½ Cu. Yd. Capacity

Hydraulic Bucket Control

Hydraulic Down-Pressure

Rear-wheel Power Steering

Automatic Tip-back Bucket

Four Forward . . .

Four Reverse Speeds

Here's a big 1½ cu. yd. Tractor Shovel with tremendous traction and flotation that can travel on or off the road at speeds up to 16 miles per hour . . . that can work on pavements, sand, gravel, mud or snow . . . that can dig tough materials and load big trucks quickly or carry its loads to disposal points . . . can level, spread and bulldoze . . . move fast from one job to the next. The HM Payloader is the most versatile, most usable Tractor Shovel ever built. It is low, compact and sharp-turning . . . works fast in close quarters . . . has four speeds in either direction and quick-acting forward-reverse control. Big 76 HP heavy duty engine is rear-mounted for maximum balance, stability and capacity. Power-boosted steer makes operation easy all day. Double-acting fingertip hydraulic control raises-and-lowers, dumps-and-closes the bucket by positive power . . . gives down pressure when needed. Automatic quick tip-back of bucket gets and retains full bucket loads . . . allows them to be carried without spillage.

WRITE FOR FREE CATALOG

on the Model HM or on other sizes of Hough Payloaders —the 1 ¼ cu. yd. Model HL, the ¾ cu. yd. Model HF, the 10½ cu. ft. Model HA.

THE FRANK G. HOUGH CO.
SINCE 1920
708 SUNNYSIDE AVENUE, LIBERTYVILLE, ILLINOIS

carrier, or rubber-tired mounting; and the revolving superstructure, which is attached to the carrier frame. The carrier, automotive in general design, has been engineered specially to serve as a mounting for heavy-duty crane lifting service.

The new unit is equipped with two Waukesha diesel engines. One engine, rated at 225 horsepower, furnishes power for propulsion of the carrier up to speeds of 18 miles per hour. The other engine powers the turntable mounted on the carrier.

The revolving superstructure is mounted on the carrier with the center of rotation just ahead of the front rear axle. At full-load speed, the turntable engine is rated at 164 horsepower. Power is transmitted from the engine to the mechanism by means of a multiple-strand Diamond roller chain to a center drive pinion. This pinion, in turn, meshes with the three power shafts of the turntable, hoist, swing and boom dericking or shovel-crowd shaft. Actual engagement of the various turntable operations is through internal expanding band clutches controlled through booster bands.

The crane boom, is all-welded design with bolted butt splices. Standard booms are 50 feet in length, made up of 25-foot bottom and top sections.

Allis-Chalmers Motor Grader

Manufacturer: Allis-Chalmers Manuacturing Company, Tractor Division, Milwaukee, Wisconsin

Claims: A new "AD-4" motor grader designed for heavy duty construction and maintenance work was recently introduced. The new unit incorporates many features of earlier AD models in addition to new developments engineered to assure maximum performance in the field.

Matching the structure of the new 22,140-lb. "AD-4" is a 104 brake h.p. General Motors 2-cycle diesel engine. Engine features unit injection, 4-way cooling and parts that are interchangeable with all other General Motors "71" Series engines.

The AD-4 features the special tubular frame design developed by Allis-Chalmers. Twisting strains and shocks imposed on the grader are said to be more easily absorbed by cylindrical sections through a flexing action.

A complete blade range is achieved by hydraulically controlled front mounted lift cases which provide direct down pressure.

Nelson Bucket Loader

Manufacturer: N. P. Nelson Iron Works, Incorporated, Clifton, New Jersey

Claims: A new bucket loader with a shorter base dimension to improve maneuverability, and with elevator and discharge mechanisms engineered for alongside truck loading and minimum headroom requirements, has just been announced.

The new Model "K5-B" is equipped with renewable steel toothed feeder blades that are said to loosen material and assure full loading for every bucket. Rated capacity of the loader is two yards per minute in earth, sand, gravel, cinders, coal, etc.

The bucket loader's pivoted discharge is equipped with a belt conveyor which loads trucks as they pass alongside. Angle of discharge is controlled from the operator's platform. Discharge conveyor can be locked in any position in its 180 degree arc of operation.

77-Pound Electric Plant

Manufacturer: D. W. Onan & Sons, Incorporated, Minneapolis 5, Minnesota

Claims: Considered the smallest and lightest four-cycle, engine driven, A. C. lighting plant ever developed, the new Model "AAE" generates 350 watts alternating current . . . is small enough to fit into the trunk compartment of an automobile. It weighs 77 pounds.

The new AAE plants are available in both 115-volt Alternating Current models and in 6, 12 and 32-volt D. C. battery chargers. Model O3AAE develops 350-watt, 115-volt A. C., while the battery charging models are available in 300 and 400 Watt capacities. All models have electric push-swing starting.

Huber Trench Roller

Manufacturer: Huber Manufacturing Company, Marion, Ohio

Claims: A trench roller, with a per-lineal-inch compression said to be equal to or exceeding that of most standard 10-ton rollers, is a new addition to the Huber line of road building and maintenance machinery.

Designed for road widening, relocation, repair, and various types of new construction work, the machine has features of interest to the operator. To give the operator the advantage of facing his work at all times, the seat pivots around the steering post. According to the manufacturer, controls are simple, easy to manipulate and conveniently placed. Hydraulic jack permits raising or lowering the outboard wheel to level the machine when working in any trench up to 13 inches.

"Our Page AUTOMATIC has given 11 months of solid service without being taken off the rig for repairs."

says operator George Whiteside of Northern Illinois Coal Corp.

Unretouched photograph of Page AUTOMATIC after 11 months' service.

"THAT'S real performance in anybody's language and a record that helps us get top yardage consistently day after day.

"I've operated Page buckets for twenty years . . . everything from small ones right up to this 30-cubic yard AUTOMATIC and they just can't be beat. I always get full loads within 2 to 3 bucket lengths without any recasting or jockeying for position. There is no spillage or windrows and the AUTOMATIC is easy on the cable which means no fairlead chatter.

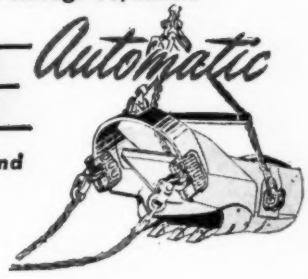
"All in all, the AUTOMATIC does a fine job . . . a full load every minute and at the end of the day, I'm not tired out from wrestling the bucket to keep my quota up to par."

Whether you use a 3/8-yd. or a 30-yd. AUTOMATIC, or any size in between, you can dig more yards at a lower cost per yard than with any other bucket you ever used.

PAGE ENGINEERING COMPANY
Clearing Post Office, Chicago 38, Illinois

PAGE *Automatic*

DRAGLINE BUCKETS *and* **WALKING DRAGLINES**



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FOR M-R-S FORM 116

Mr. Contractor:

HERE'S THE ANSWER TO YOUR EQUIPMENT PROBLEM

The
M-R-S "125"

Costly investments in **single-purpose** equipment can now be eliminated, opening the door to greater profits. The M-R-S "125" heavy-duty, rubber-tired tractor gives contractors, large and small, the equipment they need on EVERY job, all in a single, modest, prime-mover investment It has speed and power for long and short haul scraper work. It offers the necessary traction for the roughest going, through the M-R-S patented feature of weight transfer. It has rubber-tired efficiency and economy. And MOST OF ALL it is readily adaptable to most any STANDARD MAKE NEW OR USED SCRAPER. Put your own scraper equipment to work for your long scraper hauls. See your M-R-S dealer today or write direct to M-R-S Manufacturing Company for complete information and specifcations.

* A towing-type tractor is considered to be a conventional, four-wheel tractor with steerable front wheels and having approximately two-thirds of its total weight on the drive axle, thereby possessing tractive ability for all-round drawbar work.

"Built In" Dependability **in the world's**

largest and most versatile *towing-type tr

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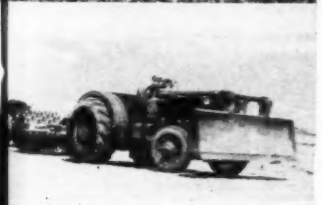
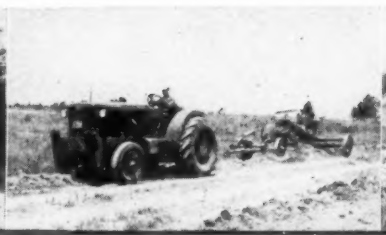
To The Thousands of Scraper Owners



Put Your Own Equipment To Work On Long Scraper Hauls:

There's no dividends or profits in idle equipment and there's not one ounce of idleness in the M-R-S "125". Here you have the power and speed that converts your own scraper into long haul equipment. Here you have the prime mover for dozing and compacting when not engaged in scraper work. Here you have the prime mover for low cost hauling, on and off the highway, when teamed with the Mississippi Wagon. Here you have power for grading, and plowing. Here you have DEPENDABILITY and VERSATILITY! Invest today in WORKING EQUIPMENT . . . eliminate COSTLY IDLENESS!



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Shots from the FIRING LINE

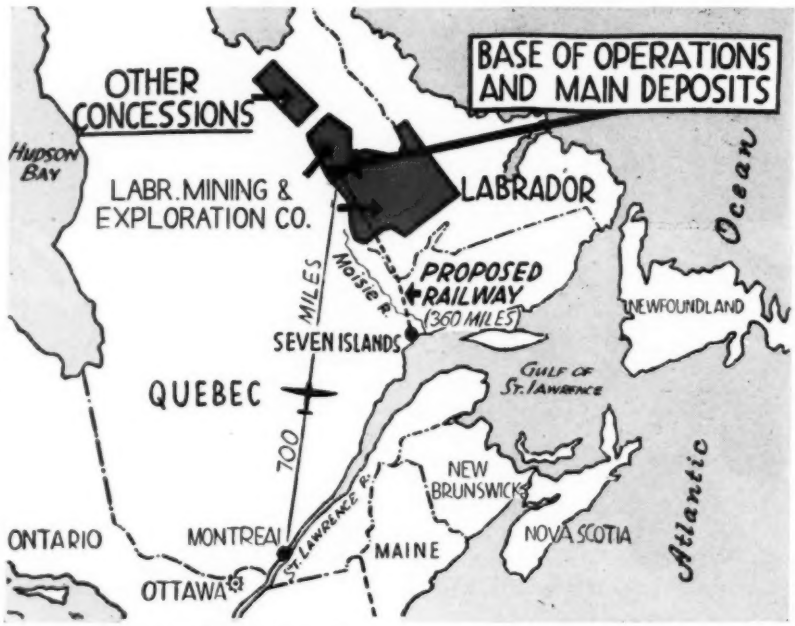
Labrador Iron Ore Deposits May Rival Those of Mesabi

Attention of iron ore miners everywhere is focused today on a 350-mile stretch of isolated, almost uninhabited wilderness that straddles the Quebec-Labrador border a good 700 miles northeast of Montreal. Ten deposits of open pit ore have been drill-tested in this geographical "trough" that runs anywhere from 10 to 60 miles wide. Drillings indicate the presence of 140 million tons of high-grade ore, much of it better than 60% iron.

Before this year's drilling season ends, the exploring companies expect to have 160 million more tons blocked out — enough to start plans to bring the field into production and to warrant building a 360-mile, $70 million railroad to haul out the ore. The only way for men and machinery to reach the field today is by air. All exploration equipment — including bulldozers and churn drills — has been flown in piece by piece.

Some geologists believe intensive drilling may "prove up" an almost limitless supply of ore. This is good news not only for Canada's ore-starved steel industries, but also for U.S. industrialists, who know they can't always count on the Lake Superior area's great reserves.

Although no official announcement has been made, some experts say that shipments of ore will start in five years. Present plans reportedly call for hauling out 10 million tons a year at first and working up to 20 million (U.S. output was over 90 million tons last year).



• Above: Rich iron ore deposits are being tested by Labrador Mining & Exploration Co. on the Labrador-Quebec border 700 air miles northeast of Montreal. Cold weather will allow mines to operate five or six months of the year. July is the only month without frost.

• Bucyrus-Erie churn drills and a diamond drill work in Labrador proving iron ore deposits in the Ungava field.

Start Work on Turnpike Extension to Philadelphia

First actual construction on the Pennsylvania Turnpike's eastern extension to Philadelphia was started Sept. 28 in Fairview Township, York County, following ground-breaking ceremonies in which Gov. James H. Duff hailed the turnpike construction as the opening of "a new era in transportation."

The contract for construction of the initial 3.4 mile stretch of the eastern extension was awarded to the Central Pennsylvania Quarry Stripping and Construction Co., of Hazelton, Pa., on a bid of $1,179,779. The Turnpike Commission expects to award about 80 contracts before the extension is completed, with the total cost of the 100-mile extension estimated at $80,000,000. It is hoped to have the road open to traffic in 1950.

Besides extending the toll road eastward to Philadelphia, the state also plans later to construct a westward extension from Pittsburgh to the Ohio line, thus providing a complete express route across the state. The present turnpike, which links Harrisburg and Pittsburgh, has attracted widespread interest as a model for proposed similar projects in other states.

Describing the turnpike as "the greatest highway anywhere in the world," Governor Duff, in speaking at the extension's ground breaking ceremonies, cited its value in stimulating greater industrial activity in the state and also pointed out its military value.

Safety Awards to Marquette

Marquette Cement Manufacturing Company has received three Certificates of Achievement in Safety from the

U. S. Department of the Interior, Bureau of Mines, in recognition of its safety record in operations at Marquette quarries in Oglesby, Ill., Cape Girardeau, Mo., and Earlham, Ia. To achieve this distinction in national safety competition, Marquette men at the Oglesby quarry performed 126,157 man-hours of work without a lost-time accident in 1947. The record of the Cape Girardeau quarry was 63,622 injury free man-hours during the same period. Marquette Earlham quarrymen hung up a record of 44,960 consecutive man-hours of safe work in 1947.

In a letter accompanying these certificates James Boyd, Director of the U. S. Bureau of Mines, said: "The attainment of this injury-free record was possible only with the full cooperation of all employees and officials in a well-designed accident prevention program. The achievement of a position of national leadership in accident prevention is an accomplishment of which you and your employees may take great pride. Kindly extend my heartiest congratulations to your men for the excellent past record and best wishes for its continuation."

Cranes Simplify Seattle Building Wrecking Work

By W. J. Granberg

Construction of Seattle's new Public Safety Building meant the wrecking of one square block of business and office buildings, plus 60,000 cu. yds. of excavation—a job which saw an unusual application of excavating equipment.

Matheny & Bacon, Inc., which held the wrecking subcontract under Kuney & Johnson, general contractor for the new structure, has the reputation of not only being one of the world's largest wreckers, but of consistently recovering a high-percentage of salvage. The value of the demolishing contract was about $100,000 and involved, among other things, about 5,000,000 brick and 5,000,000 feet of lumber. Matheny & Bacon determined to save 97 per cent of the material in the square block of buildings, and did so.

To accomplish its goal, the subcontractor employed a K-14 Insley crane, with 50-ft. boom and 15-ft jib. One-yard and a half-yard Owen clamshell buckets were used, as the occasion demanded. Also used was a Lorain MC-414 Moto Crane with 80-ft. boom using a 1-yd. Bucyrus-Erie drag bucket and a ⅝-yd. Owen clamshell.

Use of these two cranes made possible reaching high into the office buildings for removal of debris and material as fast as the wreckers made it available. Waiting trucks were loaded immediately and thus the entire site of the project was kept clean. Wooden chutes were run up into the buildings, separate ones for brick, plaster, lumber and wood, and it was the use of these, coupled with the cranes, that made possible the high percentage of salvage. Matheny & Bacon is one of the very few wrecking firms in the Pacific Northwest employing cranes in its demolishing work.

Simultaneously with wrecking work, about 60,000 cubic yards of earth were removed by the Bay Construction Co. in an excavation subcontract. The building site was dug out 21 feet below the level of the lower street and 40 feet below the upper street level. In addition, a walkway tunnel was dug from the site to the County-City building across the street. The value of this subcontract, including backfill work of the removed earth, approximated $70,000. Also involved in the work was removal of old concrete walls from demolished buildings.

Bay Construction used a 2-yd. Northwest 78 shovel and a ¾-yd. Northwest 25 hoe, plus a D-6 Caterpillar bulldozer. Fifteen 5 and 8-yd. Mack trucks were employed in hauling earth. The job took about three months. Excavation

Left: In this view of a portion of square block of business and office buildings being removed to make way for Seattle's new Public Safety Building, ¾-yd. Northwest hoe and 2-yd. Northwest shovel excavate for foundation and level to Mack trucks. Chute in background is one of four used by wreckers in salvaging material.

Below: Closeup of boom of Insley K-14 crane boom shows how debris was picked from buildings with 1-yd. clamshell bucket to facilitate removal of salvageable material.

work was paced to follow close on the heels of the building wrecking work, with earth hauled away as rapidly as it was removed in order to allow full use of cranes and shovels anywhere on the site.

Morton is Maine Chairman

Lloyd B. Morton of Farmington has been elected chairman of the Maine Highway Commission, succeeding Stillman E. Woodman of Machias.

Savin Low Bidder on $7-Million N. H. Turnpike

The Savin Construction Co., of East Hartford, Conn., is the lowest of nine bidders on the $7,500,000 New Hampshire Turnpike, a toll road project to be built between Portsmouth and Seabrook. The Savin firm's low bids were $5,244,975 for bituminous macadam construction, and $6,266,359 for concrete construction.

State Highway Commissioner, Frederic E. Everett expressed satisfaction with the bids, and declared indications were that the big project could be completed "well within" the $7,500,000 appropriation made by the 1947 New Hampshire Legislature. He estimated right-of-way costs would be about $500,000 and the engineering costs approximately $300,000.

Second lowest bids for construction were submitted by the M. De Matteo Construction Co., of Quincy, Mass., with $5,271,234 for macadam, and $6,506,227 for concrete. Third lowest bidder was the Lane Construction Co., of Meriden, Conn., with $5,820,068 for macadam, and $6,686,984 for concrete. Next was B. Perini & Sons, of Framingham, Mass., with $5,908,418 for macadam, and $7,383,277 for concrete.

Other contractors entering bids, which ranged from $6,000,000 up to $9,000,000, were T. Stuart & Sons, Watertown, Mass.; Graves, Winkelman, Johnson, Drake & Piper, of New York City; Carlo Bianchi & Co., Framingham, Mass.; George M. Brewster & Son, Bogota, N. J.; and J. F. Fitzgerald Construction Co., Boston.

Demonstration Gives Windy City New Airport Area

Chicago's dreams that one day air travelers arriving in the Windy City might complete their flights directly to the heart of the city were given a definite boost during the summer, through the generosity of 12 manufacturers who participated in the recent Road Show.

The dream will become reality upon completion of current construction of a new downtown "taxi" airport which will provide small plane taxi service from the principal and suburban airports, Municipal and Orchard, into which commercial airlines bring thousands of travelers daily.

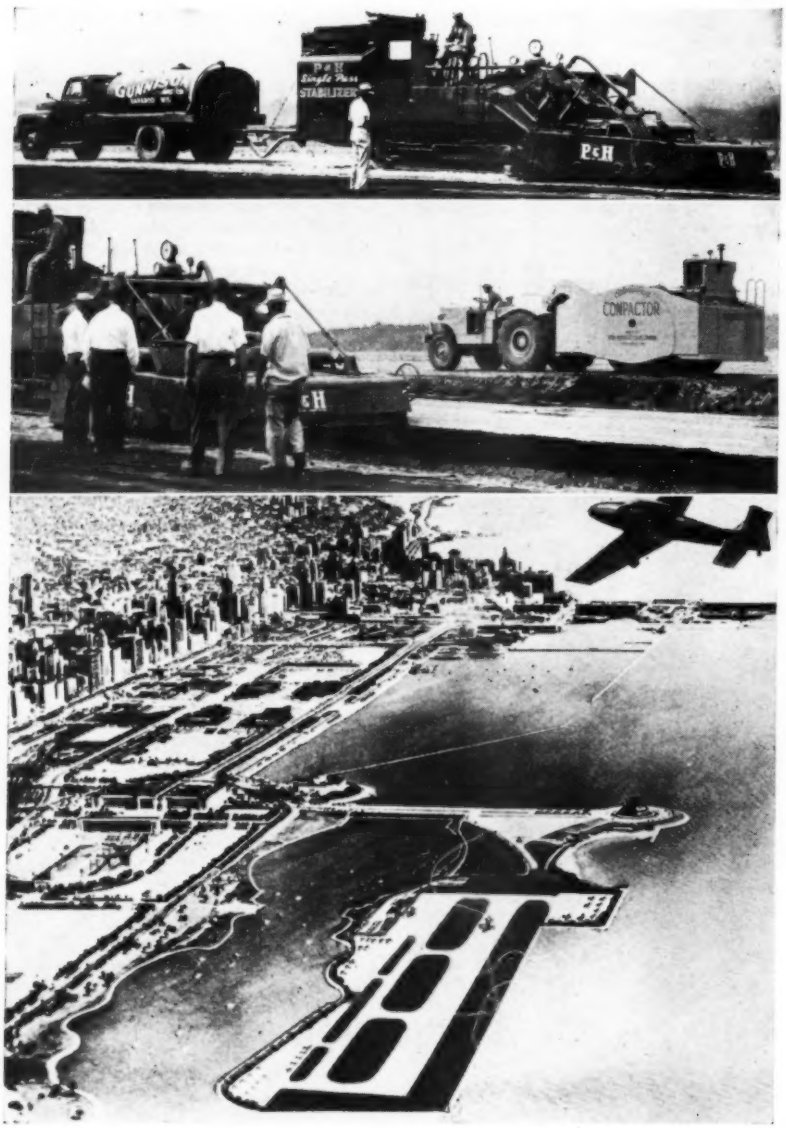
The new, small airport, with a runway of 2800 feet, will be offered on Northerly Island, a man-made island which was a part of Chicago's World's Fair in 1933 but which has since served little useful purpose.

While work has progressed gradually on the runway proper, the period of the Road Show found one phase of its development inaugurated and completed in a display of soil stabilization. During that period manufacturers who were participating in the Road Show contributed equipment which combined to construct the plane parking area of the new port, an area involving 18,000 square yards — 280 feet wide, 600 feet long and six inches thick. The surface was a bona fide soil-cement paving.

The P & H single pass stabilizer, a development of the Harnischfeger Corporation, making use of the in-place materials, was the unit which in one pass pulverized, blended, watered, mixed and spread the surface ready for compaction.

It was followed by a Heil TRO double drum oscillating roller which compacted the mixture to the required density. This unit was pulled by the Oliver-Cletrac "B" 38-hp track-type tractor.

The initial compaction was effected by the use of the 115-hp "Caterpillar" diesel DW10 wheel-type tractor, pulling an Iowa Manufacturing Co. "60" compactor, a rubber-tired unit offering a new approach toward obtaining re-



• Top: Start of the soil-cement operation at Chicago's Northerly Island Airport. A P & H single pass stabilizer operates in tandem with a Ford-truck-mounted Gunnison water tank.

• Center: The stabilizer lays down a 6-in. layer of pulverized, blended, and watered soil-cement mixture. Rolling a previously-laid surface in the background is a Cedarapids "60" compactor drawn by a Caterpillar DW-10 tractor.

• Left: The airport—constructed on the most northerly of Chicago's man-made islands—as it will look when completed.

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GELAMITES

Why they are replacing older-type explosives

High cartridge count, Hercomites* and Gelamites* are delivering explosive energy equal to that delivered by the older-type Extra Dynamites and Gelatins they are replacing . . . at considerable savings in cost. Hercomites and Gelamites are easy to handle. They are packed in handy Tamptite* cartridges that make "slitting" unnecessary and save powder. Tamptite cartridges are standard for Hercomites and Gelamites in all sizes regularly used for mining.

Write today for our new explosives booklet, "Hercomites and Gelamites for Lower Blasting Costs."

HERCULES POWDER COMPANY

INCORPORATED

*REG. U. S. PAT. OFF.

972 King Street, Wilmington 99, Delaware

XRB-8

quired densities through the use of vibrating action with a superimposed load.

Compaction planes were removed through use of a J. I. Case "SI" industrial rubber-tired tractor and a spike-tooth harrow with final compaction provided by a Wm. Bros "45" pneumatic-tired oscillating "Wobblewheel" roller. Both preliminary and final shaping were handled by an Austin-Western 99H power grader with a 13-ft. blade.

While the parking area construction operation served somewhat as a demonstration for Road Show visitors, each item of equipment was employed in an operation to which it is normally applied in general earthmoving and construction work.

The area was dedicated in the latter stages of the Show and officially and formally presented to the City of Chicago during appropriate ceremonies at the site.

Participating manufacturers included Austin-Western Co.; Wm. Bros Boiler & Mfg. Co.; J. I. Case Co.; Caterpillar Tractor Co.; Galion Iron Works & Mfg. Co.; Gunnison Mfg. Co.; Harnischfeger Corp.; The Heil Co.; Iowa Mfg. Co.; the Oliver Corporation; and T. L. Smith Co.

Protest 80% Diversion Increase in One Year

The National Highway Users Conference, through its administrative committee recently protested as "inexcusable" a rise of 80 percent in one year in the amount of highway user taxes diverted by the states to non-highway purposes.

Meeting at the N.H.U.C. headquarters in the National Press Building, the committee adopted this resolution: "During a period when demands have been heard in many states for increased highway user taxes and for toll roads, the amount of special highway user taxes diverted to non-highway purposes has risen from $94,579,000 in 1946 to $170,518,000 in 1947, an increase of 80 percent.

"The advocates of increased taxation of the highway user, and the advocates of the double-tax toll roads, contend that present highway user revenues are inadequate to build the roads our country needs. We cannot reconcile some of these demands with the inexcusable diversion in many states of present record revenues."

New York Diversion Heavy

The diversion figures to which the committee referred show that in 1947 about ten cents of every highway-user tax dollar went for non-highway purposes. These figures, issued by the Federal Public Roads Administration, show that Rhode Island led the list of diverting states with a 57 percent diversion. Other states diverting over 15 percent of their highway user taxes were Florida and Georgia, both 36 percent; New York, 28 percent; California, 25 percent; Texas, 23 percent; Oklahoma, 19 percent, and Tennessee, 17 percent.

Largest in dollar amounts of diversion were New York, with $36,148,000, and California, $31,618,000. The 1947 increase in diversion reversed a five-year downtrend. The 1947 amount brings the nation's diversions since 1924 to a total of $2,487,989,000.

Thirty-one states are listed by the Federal Public Roads Administration as having used highway user taxes for non-highway purposes in 1947. In some, the diversions are large; in others very small. This is the complete list, with amounts:

Alabama	$ 1,343,000
Arkansas	45,000
California	31,618,000
Delaware	67,000
Florida	20,752,000
Georgia	13,655,000
Illinois	576,000
Indiana	632,000
Louisiana	3,189,000
Maine	12,000
Massachusetts	67,000
Minnesota	328,000
Mississippi	23,000
Nebraska	2,244,000
New Jersey	609,000
New Mexico	901,000
New York	36,148,000
North Carolina	1,863,000
Ohio	7,216,000
Oklahoma	6,677,000
Oregon	274,000
Pennsylvania	33,000
Rhode Island	4,810,000
South Carolina	737,000
South Dakota	88,000
Tennessee	7,318,000
Texas	24,489,000
Utah	301,000
Vermont	29,000
Virginia	73,000
Wisconsin	3,935,000
District of Columbia	466,000

Some of the states listed above are among those with constitutional amendments safeguarding highway funds for highway purposes. In some of these states, however, the prohibitions are not broad enough to cover all highway user taxes. In certain other states, with heavy diversion records in the past, sharp reductions in diversions have occurred because of current construction programs.

• White Oak Excavators, Inc., is using this International TD-24 mounted Bucyrus-Erie bulldozer to cut, grade and fill a bypass road to Downsville Dam, Downsville, New York, for the city of New York. The job is expected to run to 5,000,000 cu. yds. of soil, rock and trees.

• Newest of three quarries of the rapidly-expanding Gregory Excavating Company, Rockford, Ill., is this one located seven miles Southeast of the city. Shot limestone is loaded from the 20-ft. face by the ¾-yd. Northwest 25 shovel direct to the hopper of the International-powered crusher. The truck-mounted generator at left is an International-powered 30-KW Ready Power. The 1-yd. Hough HL-A Payloader (center foreground) performs utility work on the job as does an Allis-Chalmers HD-7 tractor with Gar Wood bulldozer (extreme right). The truck being loaded by a Cedar Rapids conveyor (center) is an 8-ton Reo.

give him a **bigger bonus**

without budging your budget!

Sure he's happy—and you are, too.

He was expecting a $75 bonus. Then you decided to give the bonus in U. S. Savings Bonds. So he receives—not $75—not a $75 Bond—but a $100 Bond.

It looks like more—and it *is* more. Not just because every $3 put into Savings Bonds will pay $4 at maturity. These Bonds are builders of future security for employees and for the nation as well (which means for business). They're a powerful weapon against inflation. They make employees "holders of shares in America"—thus build enthusiasm for our traditional competitive system.

They pay *your company* a bonus, too—in increased employee contentment, which shows up as less turnover, reduced absenteeism, fewer accidents! All these benefits are being proved and re-proved every day in thousands of companies that operate the Payroll Savings Plan—the popular plan for the regular purchase of Savings Bonds by employees.

You're helping your employees, your country, and yourself by deciding to...

give the bonus in Bonds

...and by putting plenty of push behind the P. S. P. It's easy with the help you get—for the asking—from your State Director, U. S. Treasury's Savings Bonds Division. Call him now!

The Treasury Department acknowledges with appreciation the publication of this message by

Excavating Engineer

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and the Advertising Council.

Largest Dam

(Continued from page 38)

As no adequate electrical supply is available within 48 miles of the dam site, generating capacity of 1,100 kilo volt amperes is being installed, which amounts to about 75 per cent of the installed horsepower of the plant, this being more economical than the provision of the necessary land line to bring in grid power. The alternators will be diesel driven consisting of two sets each of 325-a and two each of 225-a capacity. The two former are already in operation.

A quarry for the production of the concrete aggregate located about four miles from the dam site involved the construction of a mile of road (about half of it on a gradient of 12½ per cent), and temporary crossing of two rivers. After blasting, rock is loaded here by two 1½ cu. yd. Ruston-Bucyrus 37-RB diesel shovels to six 12-ton Fodens, four 10-ton front wheel drive dump trucks, and a number of 6-ton dumps which take the material to the dam site for crushing and screening.

The rock-crushing plant is located on the east bank of the valley just downstream of the dam. Trucks deliver rock for crushing by an access road level with the top of the dam. The crushing plant comprises primary breakers, secondary crushers and machines for producing sand, and consists of two Broadbent 42 x 36-in. jaw crushers operated by 140-hp motors, two Parker 30x18-in. and two 24x12-in. jaw crushers operated by 50 and 30-hp motors respectively, and two No. 4 Kubits operated by 60-hp motors.

Crushed rock is screened in rotary and vibratory screens and

• Top: Camera, facing north, has recorded view of the site and the administrative area.

• Center: River diversion channel and temporary dam are seen in this southward view.

• Left: 1¼-yd. Ruston-Bucyrus shovel at left excavates for foundation blocks. River diversion channel is in foreground.

Crushes 300 TONS A DAY...

STATE OF NORTH CAROLINA
STATE HIGHWAY AND PUBLIC WORKS COMMISSION
A. H. GRAHAM, CHAIRMAN
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JOHN A. GOOCH
EQUIPMENT DEPARTMENT
S. C. AUSTIN, EQUIPMENT ENGINEER
RALEIGH, N. C.

E. F. Craven Company
Greensboro, N. C.

Gentlemen:

Att: Mr. F. Duval Craven

I wish to thank you very much for the pictures of two crushing plants in our Asheville Division which you forwarded me on June 27th. In this connection I wish to advise you that we find the General Motors power units used with these crushers to be very satisfactory in operating plants of this type.

Very truly yours,

S. C. Austin

EQUIPMENT ENGINEER.

This rock-crushing plant at Weaverville, N. C., is one of two the North Carolina State Highway Department powers with six-cylinder Series 71 General Motors Diesel engines.

Cuts Fuel Costs 75%

Sounds unbelievable, doesn't it? But that's just what happened when the North Carolina Highway Department's rock crusher at Weaverville was converted from gasoline to General Motors Diesel power.

Look at the records! To produce 300 tons per day, with the original engine, 55 to 60 gallons of gasoline were needed. Since converting to GM Diesel power in 1946, fuel consumption has dropped to 30 gallons of Diesel fuel a day. This alone amounts to a cost saving of approximately 75%. Add to economy the advantages of dependable steady operation, easy maintenance and instant response to varying power demands and you'll see why the plant foreman says, "Best power I ever saw. It's a dandy."

For economy, efficiency and versatility, the best answer to your power problem is a General Motors Series 71 Diesel engine. Write today for the complete story.

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES... Up to 200 H.P. **DETROIT 28, MICHIGAN** MULTIPLE UNITS... Up to 800 H.P.

GENERAL MOTORS

GM
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DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

elevated to three stock piles in grades of 6-in. maximum, 1½-in. maximum and 3/16-in. sand. Handling from stock is by belt conveyor in a tunnel below the piles and thence by elevating conveyor to hoppers above the batching plant. The whole installation is electrically operated, controlled from one cabin near the primary breakers.

Cableways

Low heat cement manufactured at Aberthaw in South Wales is delivered in bulk by railroad to the nearest point 9½ miles from the dam site in special 3½-ton steel bottom-dump containers and thence by trucks, each vehicle carrying two containers and making four trips per day. At site the containers are handled by two 5-ton Morris overhead hoists and will be discharged into three steel bins of 150-tons capacity each, from which the cement is fed by a 9-in. Redler elevator to a hopper above the central batching plant.

Concrete is mixed in a 3-cu. yd. tilting-drum Winget batch mixer with a 40-hp electric motor, all gauging being done by weight. The rated output of this plant is 120 cu. yds. per hour.

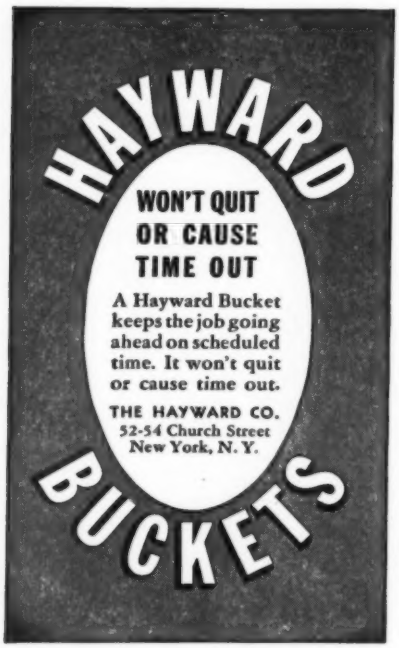
Concrete is discharged into bottom-dump crane skips each holding four cu. yds. and transported to the point of placing by two 10-ton Henderson cableways which command the whole area of the dam. The skips are transported from the mixer to a point below the cableways on two rail trucks operated on two short 4-ft. 8½-in. gauge shuttle tracks by endless haulage from two electric winches. The cableways, each operated by 250-hp motors, have fixed headmasts 80 feet high on the east bank end and traveling tailmasts, each operated by a 30-hp motor on a radial track on the west bank end.

The clear span is 1,350 feet, horizontal travel being at 1,000 fpm and hoisting at 250 fpm. Each cableway is controlled independently by operators housed on two cabins on the east bank who are in telephonic communication with the tailmast end, the batching plant and the point of deposition of the concrete. A system of dials showing the position of the lifting hooks makes blind operation possible. The tension in each main cable under full load is approximately 180 tons.

During construction of the central portion of the dam, the river has been diverted into a channel 820 feet long and about 130 feet to the east of the original bed, which has involved the excavation of some 10,000 cu. yds. of rock. On completion of the pipe tunnels in the central blocks, the river will be passed through one of these while the foundations of the dam are completed over the area occupied by the diversion channel.

Excavation of this channel took about nine months, was carried out at various times by ⅝-yd. 19-RB and 1¼-yd. 33-RB Ruston-Bucyrus draglines and a ¾-yd. 21-RB Ruston-Bucyrus shovel, spoil being loaded into 3-cu. yd. gasoline and 4½-cu. yd. diesel dumps and carried an average of 300 yards downstream to form a level area for the plant and masonry yard. The old river course was stopped upstream and down-

"It's all very nice but where is the bubbler for tourists called for in this contract?"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BUCKETS

stream by temporary dams having 24-in. thick concrete corewalls backed on both sides by rock fill. In places alongside the river diversion channel where the surface material was weak, this was removed down to sound rock and a concrete retaining wall built up above flood level.

Dewatering of the main excavation is carried out by a Gwnnes 10-in. centrifugal pump electrically operated and situated on the bank of the river diversion. A Gwnnes 6-in. pump in a main sump sunk below the lowest level of excavation is used for sinking and to maintain a dry bottom. Both pumps discharge into the river diversion. Local depressions are dewatered as necessary by portable gasoline, diesel or electric pumps of two to four inches in size.

Blasting Methods

Rock excavation in the foundations is done after blasting by 1¼-yd. 33-RB and ⅞-yd. 24-RB Ruston-Bucyrus shovels. Rock is loaded to 4½-cu. yd. dumps and 10-ton Front Wheel Drive trucks and run to spoil banks on both sides of the river upstream of the dam, involving hauls up to 500 yards. A small quantity has been run to form foundations for plant installations and for the plant and masonry yards area downstream of the dam which will eventually be made into a car park.

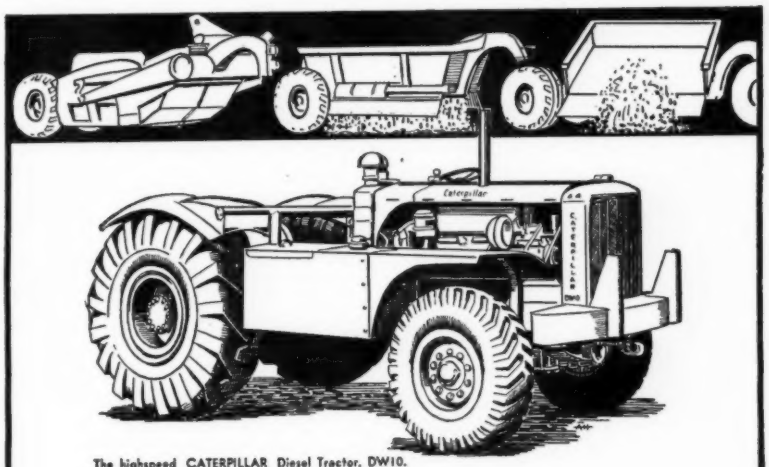
Drilling and blasting of the rock at the dam and in the quarry is done vertically and horizontally using No. 2 Polar Ammon 50 per cent gelignite detonated electrically, and as many as 150 to 200 holes are fired simultaneously. The holes are of 2-in. diameter 12 to 15 feet deep at about 4-ft. centers for both vertical and horizontal drilling for sinking and lifting. The ratio of pounds of explosive to cu. yds. of rock prepared is one to three.

Holes are drilled with Ingersoll-Rand JB-5 and CP-42 Jackhamers, and CP-50 drifter wagon drills with forged bits. Some tests with tungsten-carbide bits are being carried out. Considerable success has also been achieved in drilling horizontal holes with Jackhamers laid on planks and controlled by the feet of the operators who sit on the planks. This method is found more economical than the use of wagon drills "which lose time in moving from hole to hole."

Blasting is normally carried out during meal times or after the end of a shift, but a small amount of secondary blasting is done during working hours. Warning is given by red flag and blasting horn. Air is supplied by one 500-cfm. and five 165-cfm. portable compressors, and by one 500-cfm. and three 315-cfm. stationary compressors.

Work is organized in one shift from 7:15 AM to 6:00 PM, including two half-hour meal breaks. In winter, somewhat shorter hours are worked depending on daylight available. No Sunday work is done except on plant maintenance.

Labor strength, which at present just exceeds 300 men, is estimated to reach ultimately about 450. As labor resources of the district are very limited, men are



The highspeed CATERPILLAR Diesel Tractor, DW10. 115 HP engine. 18.8 MPH top speed (21.6 or 24.5 MPH available with optional transmission.) Five forward gears, one reverse. For use with scraper and bottom-dump or side-dump wagon.

HIGHSPEED EARTHMOVING TEAM!

On your next tough job, plan to team up the versatile, rubber-tired DW10 Diesel with a scraper or a wagon . . . maintain high production on the longer hauls . . . keep costs at a minimum.

Another of the famous construction machines we distribute and service in the major mountain and river areas of Eastern New York

T. Southworth

GLENWOOD ROAD — TRACTOR & MACHINERY CO. INC — MENANDS NEW YORK

ALBANY, NEW YORK **TELEPHONE 5-5255**

recruited from other parts of the country as well as from Eire and the Polish Resettlement Corps. A temporary labor camp to accommodate 200 men has been built by the contractor, who has also built a number of permanent bungalows for housing his staff. The supervisory staff is housed in three bungalows of a temporary nature.

Since few recreational facilities exist locally, a sports club has been formed to encourage recreation among men living in the camp, and a dance hall with billiards and other games, a motion picture projector and radio has been provided. Three canteens, one each at the camp site, the dam site and the quarry, provide hot meals.

In view of the danger of pollution to the existing public water supply, none of the labor staff is housed within the catchment area, the camp being seven miles downstream of the site and below the lowest existing dam. Staff bungalows are either near the camp or in the town of Rhayader, ten miles from the site, the men being transported in seven front wheel drive troop carriers and in busses and cars.

The dam was designed and the construction is being supervised by the London firm of consulting engineers, Sir William Halcrow and Partners, members of the Institution of Civil Engineers, acting in collaboration with the general manager and secretary, A. E. Fordham, professional associate of the Institution of Water Engineers, and the chief engineer, C. A. Risbridger, B.Sc., M.I.C.E., M.I.W.E., of the Birmingham Water Department.

The consulting engineers are represented on the site by R. J. C. Walton, M.I.C.E., M.I.W.E., as resident engineer with a staff of five assistant civil engineers, and inspectors. The contractors for the construction of the dam, Messrs. Edmund Nuttall, Sons & Co. (London) Ltd., are represented on the site by R. H. Falkiner, B.A., B.A.I., A.M.I.C.E., as agent-in-charge, assisted by a sub-agent and eight assistant engineers.

FOR ALL DIG-AND-HAUL WORK!

Sauerman Power Scraper working with portable screening plant

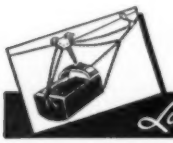
Sauerman Slackline Cableway lifting gravel from 100 ft. under water

Sauerman Machines Cut Costs

Under one man control, a Sauerman Scraper or Slackline Cableway can reach out 1,000 ft. or more and dig, haul and dump gravel, clay, or any bulk material. Simple operation! Economical use of power!

A Sauerman machine can be installed to reach across a pit, pond, river or stockpile, or up to the top of a hill. It moves material rapidly anywhere within its wide radius. Flexible for any ground conditions. Costs only a few cents per cubic yard handled. Gas, electric or diesel.

Illustrated catalog mailed on request.



SAUERMAN BROS., INC.

574 S. Clinton St., Chicago 7

Long Range Material Handling Machines

Mesabi Stripping

(Continued from page 29)

the operator digs close to the plant, takes short swings. Swings up to 180 degrees are made during periods of less demand. The "perfect electrical control" of this heavy-duty dragline—a fast-cycle high-output machine built especially for the mining industry—places "the bucket in the hands of the operator" at all times. Direct coupling to electric motors has eliminated all operating clutches and brakes, makes possible clean trimming of the inner corner of bank, and gentle accurate dumping with a minimum of spillage at the hopper. The dragline completes a move-up every two shifts (16 hours), loading in this period about 15,000 yds.

Screening Plant

At the screening plant, overburden is moved from the 260-cu. yd. capacity loading hopper on a 7 x 18-ft. manganese pan conveyor which discharges to a 7 x 12-ft. modified Simplicity vibrating screen with long tapered 4½ to 8½-in. openings. Oversize passes over the screen to a pocket for truck loading. Undersize falls to a 60-in. belt conveyor supported by rubber-covered rollers, which in turn discharges to a boom belt conveyor. This conveyor takes the material 35 feet south from the center line of the screening plant to a loading hopper on the center line of the first section of the main conveyor.

At present, the movable loading belt is 1,700 feet long, and transfers material to a 621-ft. long secondary, which then discharges to a 762-ft. long conveyor on an 8-percent grade. From here the material is carried on a 1,313-ft. long conveyor on a 2½-percent grade to the trailer feeding the stacker. This trailing conveyor, mounted on flanged wheels and traveling on tracks, telescopes under the previous conveyor and permits constant move-up of the 245-ft. stacker boom to which it is attached by a 160-ft. trailing truss and a ball and socket support. Crawler mounted, with a 75-ft. cantilever overhang at the dump end, the boom swings through a

180-degree arc to build a dump 500 feet wide.

The fill is being built to a maximum 160-ft. height above ground level—240 feet above the top of the lower lift (which will vary from 70 to 120 feet in depth to uncover the orebody) in the pit. Total length of conveyor in use at present is 5,851 feet, and toward the end of operations will be 9,851 feet. The dump being built by the stacker will cover an area of about 100 acres.

Butler Brothers estimate that there is a total of 10,000,000 cu. yds. of overburden to be removed before the ore body is uncovered. At present, Butler Brothers does not plan to operate the conveying system during freezing weather. However, some provisions have been made to convert the system to year-round operation. It is expected that stripping will be completed by 1950.

Production records for the month of June show a daily average of 20,400 cu. yds.—462,700 cu. yds. for the month. The July total was 532,000 yds., averaging 19,530 cu. yds. per day. As final changes are made, the total is expected to reach at least 600,000 yds. per month.

Butler Brothers plans to use the dragline during winter weather either for direct truck loading or for casting and it is expected that stripping will continue on a limited scale throughout the year.

Shovel Loading Out Ore

Ore is being loaded out of the pit at present on a limited scale by the 120-B shovel. The machine is handling ore it uncovered early this year in a section rather thoroughly riddled with old underground drifts. As a result, the various layers of ore are mixed and loading is slowed by the difficult sorting job the shovel has to do. Once sorted and loaded, this ore is truck-hauled to the South Agnew siding where it is dumped directly to railroad cars via a ramp. The 120-B is soon to be replaced by a larger 6½-yd. Bucyrus-Erie 170-B shovel for ore loading.

The bottom of the ore body is about 600 feet below natural ground level. Operations at this depth will require a 6,000-ft. haul

That's how P&H Hartop hard-surfacing electrodes drive down repair costs

At $35.50, you make quite a saving. You not only get a new driving sprocket — you get one that's better than new. Why? Because the sprocket has been built up with P&H Hartop Brown. You see, this P&H Hard-surfacing electrode gives you a protective coating that Rockwells 40 on the C scale. It has other advantages, too — it resists both angular shock and abrasion.

Hartop is a series of 4 different types of hard-surfacing electrodes. They are very easy to use and you can hard-surface most anything with them. Here are the details:

HARTOP BROWN — Rockwell C-40 — for angular shock and abrasion.

HARTOP GREEN — Rockwell C-50 — for general all-purpose hard-surfacing.

HARTOP RED — Rockwell C-55 — to resist severe impact and extreme abrasion.

HARTOP YELLOW — Rockwell C-63 — to resist flat impact and abrasion.

The Hartop electrode series saves money by cutting down time and maintenance expense. You owe it to yourself to have a supply on hand. Order today from your P&H distributor or write direct to us.

P&H WELDING ELECTRODES
4517 W. National Avenue
Milwaukee 14, Wisconsin
HARNISCHFEGER CORPORATION

road on a 10-percent grade to allow service trucks access to the pit bottom. Water will be a problem—two 1,500 g.p.m. turbine pumps are to be provided to keep the pit dry. These will at first operate in shafts originally sunk by the underground operators. Later, Butler plans to sink a new deeper shaft with a drift and headers under the ore body for more effective drainage.

Almost all ore has to be blasted prior to loading. Two Bucyrus-Erie 29-T churn-type drills are already on location to put down 9-in. blast holes. Taconite requires one pound of explosive per cu. yd.; Merch (merchantable ore) about .25 lb. per cu. yd.

Stripping at South Agnew goes on 24 hours a day, seven days a week. Dragline-conveyor operations shut down 15 minutes at the beginning and middle of each 8-hour shift for greasing which cannot be done while machinery is in motion. The day shift every Wednesday is shut down for maintenance work.

Butler Personnel

Butler Brothers, active on the Range for 54 years, this year are operating five groups of mines on the Mesabi Range, shipping approximately 3,000,000 tons of ore, and have large undeveloped ore reserves on the Mesabi and the Cuyuna ranges in Minnesota. Their ore conveyor, treating, and washing plants are among the finest on the Range. Earl S. Mollard is manager of mines, and H. E. Reese is superintendent of Hibbing district mines. Superintendent of the Cooley district and chief engineer is B. M. Andreas. Gust Weggum is Butler's mechanical superintendent with O. J. Anderson as assistant. Engineer at South Agnew is Lloyd Bredvold.

Supervisory employees at South Agnew include William Langevin, master mechanic; A. F. Reisinger, general pit foreman; Robert Sarago, Milton Englund, Elmer Salmi, Clarence Christian, Lawrence Bonaventura, and Robert Crist, pit and conveyor foremen. Holger Larson is mine clerk, and 1150-B dragline operators are John Reisinger, Martin Henry, Silvan Buescher, and Peter Palava. In all, 150 men are employed at South Agnew.

..Bucket selection made EASY!

Just check your:

Crane Capacity ✓
Work to be done ✓
Clearances ✓

—and select EXACTLY the BUCKET you need from Catalog No. 2076

Yours for the asking

You can't go wrong! Exactly the bucket you need is shown in picture and with complete data — in Blaw-Knox Catalog No. 2076.

Here you have the most convenient clamshell bucket catalog ever published — now it is easy to select a bucket for any kind of rehandling, digging or dredging.

Hundreds of buckets to pick from — your job, your equipment, and your conditions can be exactly met — and you will get a bucket which really performs.

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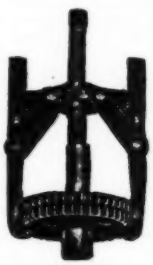
SURPLUS STOCK SALE!

13 Brand New Gear and Wheel Pullers



Popular Size Model No. 1004

The harder the pull, the tighter the arms hug the work. Made of heavy one-piece forged steel yoke. Heat treated forged steel arms and straps.

Will take gears, wheels, etc., up to 18" in diameter.

Diameter	18"
Reach	15½"
Diameter, Screw	1¼"
Length, Screw	16"
Hole adjustment	3 hole
Weight	40 lbs.

Bargain Price $22 ea. F.O.B South Milwaukee

Bucyrus-Erie Co.
South Milwaukee, Wis.

Q. What one method of detonating has these five advantages over any other method?

A. The PRIMACORD method . . .

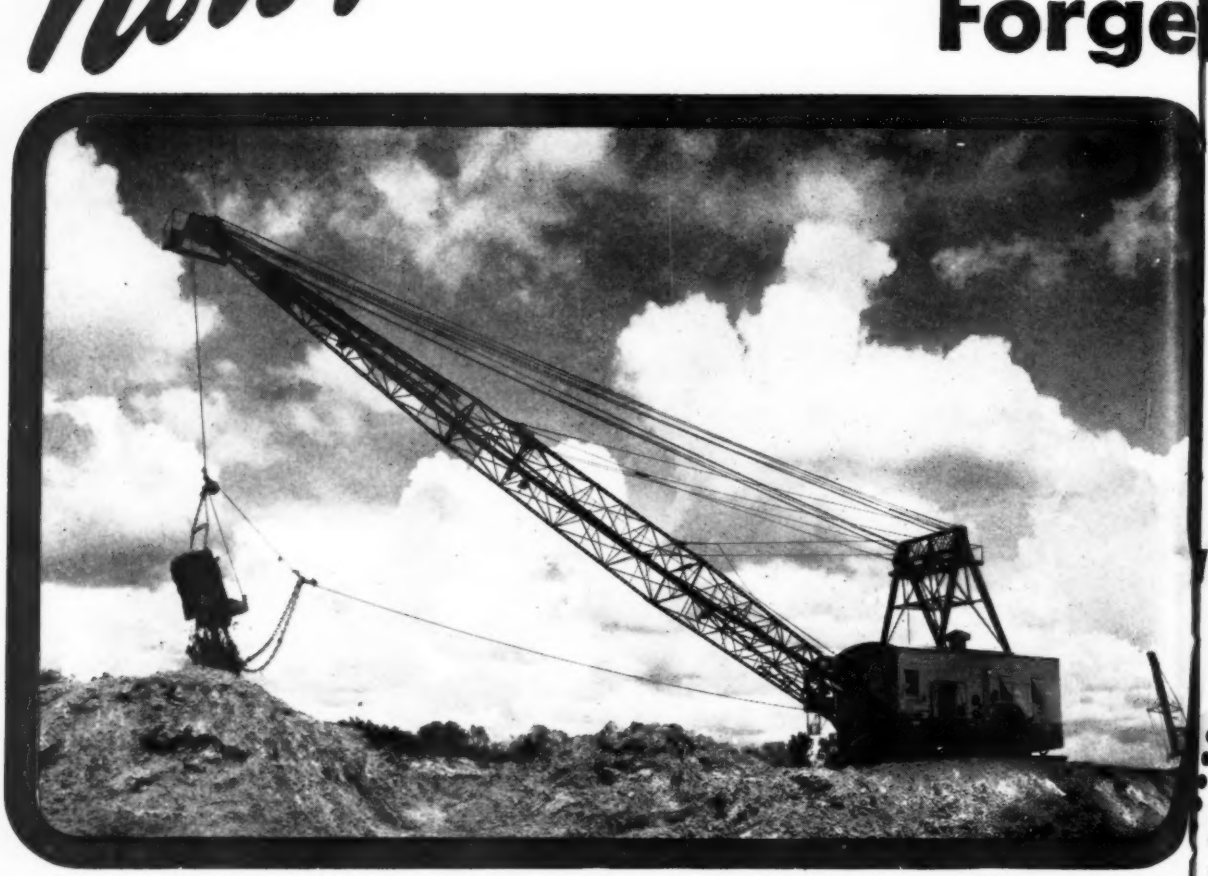
1. Primacord extends the full depth of a hole, contacting every cartridge in the load. Thus, *it initiates the entire charge at maximum power.*
2. Primacord can be hooked up for multiple-hole shots so that *it fires front lines a split-second before succeeding ones.* This permits you to plan for ideal relief of burden and secure better fragmentation.
3. Since Primacord is a non-conductor, *it is insensitive to any stray electric currents,* and is the only logical detonator to use around high-voltage equipment or wherever lightning storms are common.
4. Primacord reduces loading time because *it hooks up quickly and easily* with square knots for the main lines and half hitches for down-hole connections.
5. Wound on easy-to-handle spools, *Primacord comes in grades to meet every blasting condition.*

Blasters who use Primacord consistently agree there is no substitute. For more information ask your explosives supplier . . . or write us direct. The Ensign-Bickford Co., Simsbury, Connecticut. P-6

PRIMACORD-BICKFORD Detonating • Fuse •

Also Ensign-Bickford Safety Fuse Since 1836

Now! When You Orde
Forge



Tests Prove Service Life of is Greater

"Wish to advise that the 'Tuffy' Drags which we said would go under 200,000 yds. went 432,371 yds. . . . this is the best average yardage we have ever had."

"This rope...gave 21 days service, which is over normal."

"This rope was installed April 16th and removed May 18th, a total of 27 days of service which is very good."

From all parts of the country, replies such as these verified the claims made by Union Wire Rope engineering specialists who designed Tuffy Draglines. In-the-field tests were made under severe operating conditions where Tuffy handled many types of material on different equipment. Tuffy's extra flexibility, abrasive resistance and stamina were challenged in digging, casting, and loading operations. Yet results of the tests were the same in all cases: Longer Life, Better Performance, Greater Economy.

Tuffy is a special rope for any and all dragline jobs. It is designed by the same specialists who have made hundreds of other Union Wire Rope products the standard of quality in the construction field.

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Wire Rope

DRAGLINES . . .
Everything Except

the

the ? inch

the ? feet

DRAGLINES
are Built Tough to Meet all Operating Conditions

Extra flexibility and maximum abrasive resistance are built into Tuffy Draglines to assure dependable performance on any type of equipment—handling any type of material. Wet and dry dirt, sand, rock, gravel, cement, minerals, all give way to Tuffy's structurally tough construction. At high speeds or low speeds, Tuffy Draglines give top operating efficiency; they hold securely to drum when casting, ride better on grooves and are easier and safer to use. Put Tuffy to the test! He's built tough!

Just These 3 Specifications

Tuffy . . . Size . . . Length—that's all you order to get the RIGHT dragline for your particular job. No more confusing specifications, only to end up with a rope that is restricted to use under limited operating conditions. Now—in one simplified order—you get Tuffy Draglines designed to give maximum performance in *all* operations.

Always specify Tuffy when you order. (Example: 225' 1¾" "Tuffy" Dragline). Mail coupon today for illustrated folder.

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☐ Send Complete Illustrated Folder on Tuffy Draglines.

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NOT in the *Contract*

"Is Jim a confirmed bachelor?"

"He is now. He sent his picture to a Lonely Hearts Club and they sent it back with a note saying: 'We're not that lonely'."

Excavating Foreman: Come on! What's the matter with you?

Exasperated Truck Driver — Oh, I'm well, thanks, but my engine's dead.

"I think I'll propose my wife for congress-woman."

"Why?"

"Because she's so good at introducing bills into the house."

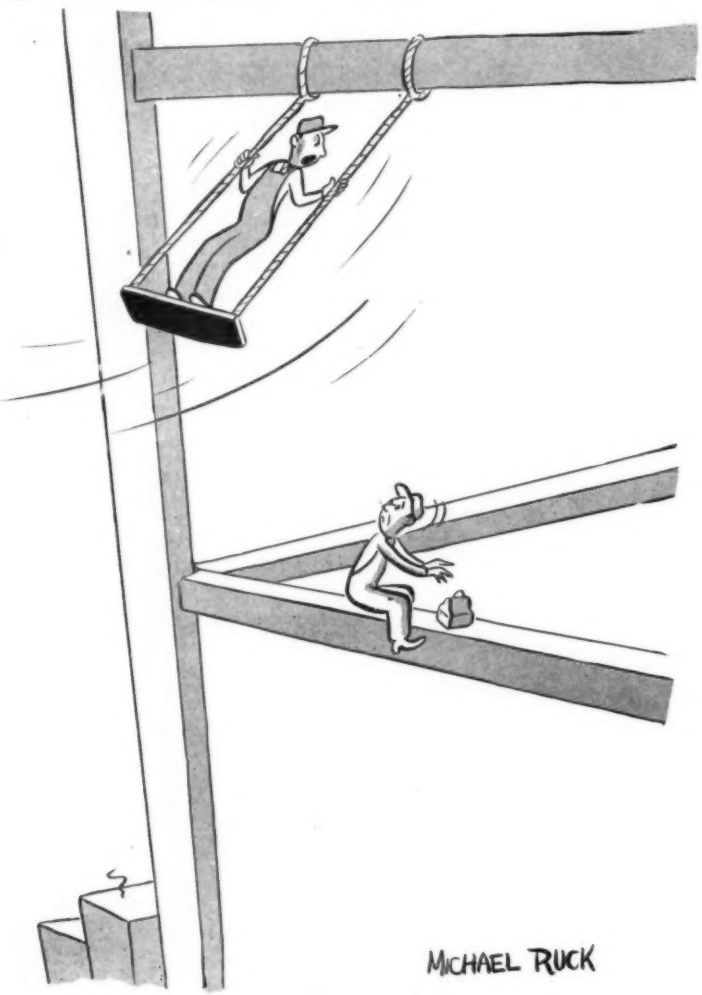
"It's funny," remarked the visitor, "but this town's population never seems to increase. Don't you have any births here?"

"Sure," came the reply, "but every time there is one about three fellows leave town."

The visiting preacher had just finished a chicken dinner. While he was looking out the window he saw a rooster strutting about the yard.

"That's a mighty proud looking rooster" he remarked.

"Yep," said the host. "One of his sons just entered the ministry."



"I don't ask what you do on your lunch hour, do I?"

A shovel runner working in the Ozarks ate a meal with a mountaineer and his family. When he asked for cream for his coffee, he was told that they hadn't had any milk since their dog died last summer. The runner was startled.

"A good dog," the mountaineer added. "He never failed to bring in the cows!"

Voice (to visitor at the gate of nudist colony): "Whatcha want?"

Visitor: "I want to join."

Voice: "You can't with that blue serge suit on."

Visitor: "That's not a blue serge suit—I'm cold."

She stepped out of the bathtub and onto the bathroom scales. Hubby came in the back door. He observed what she was doing and inquired, "How many pounds this morning, honey?"

Without bothering to look around, she answered, "Fifty, and be sure you don't leave the tongs on the back porch."

It was spring out in the country: "How's the sentiment out here?" asked a state politician.

"Still going strong," answered a farmer. "There were six cars parked in my lane last night."

Father lecturing son: "George Washington laid down a pattern of honesty that you might do well to follow, son."

Son: "If he was so honest, how come on his birthday they closed all the banks?"

The project boss and engineer were sitting in a local cafe. Across the way sat a shovel runner and a lovely lass. The super's interest prompted him to send a note to the runner:

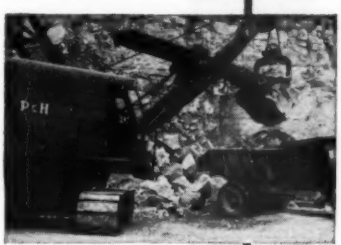
"I believe I studied with you at Yale, and the engineer thinks he studied with you at Princeton. Please come across and straighten us out."

The runner replied, by note: "I didn't study at Yale or Princeton, but I once did study at the National School of Taxidermy and I'm taking care of this pigeon myself!"

Repair Your Heavy Equipment

ON THE SPOT

. . . use a P&H Portable Welder — and save maintenance time and money



Moving heavy shovel, tractor, dump wagon, bulldozer, ditcher, crusher, and scraper parts back to a central shop for repair is a costly, time-consuming job.

Much of this expense can be spared — just wheel out a portable P&H Welder and take it wherever your trouble occurs. Weld the break or build up the worn part with P&H electrodes. This mobility is also all-important when repairing or laying oil field pipe lines.

Besides saving you important time and money, P&H portable welders are economical to use. Here are a few noteworthy features:

Low fuel consumption — The P&H idling device automatically regulates engine and generator speeds in accordance with arc time. It reduces wear and fuel costs.

Easy operation — One heat control regulates the welding capacity of the generator. There is no chance for operator confusion.

Peak welding efficiency — The "Visi-matic" scale enables your operator to select instantly the proper welding heat for the electrode being used and the job to be done. This results in better, more uniform welds.

Dependable performance — The P&H generator is similar to those used by thousands of industrial users throughout the country, because of their efficiency and reliability.

Every mining man, quarry operator, or contractor can save himself repair time and money and maintain faster production schedules, by having a P&H portable welder handy. These gasoline-operated units are available in 2 sizes — the WN-200 with a welding service range from 30 to 260 amps, and the WN-300 with a range from 30 to 375 amps. Standard equipment includes 35 feet of welding cable, 30 feet of ground cable, a P&H electrode holder, weldor's helmet with lenses, wire brush, P&H welding manual, and 50 lbs. of P&H electrodes. See your nearest P&H representative or distributor. Write us for bulletins.

WN-300 also available with 4-wheel mounting.

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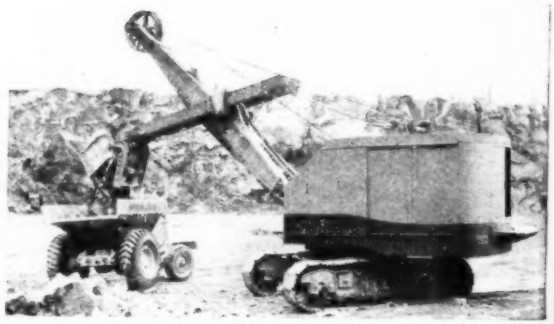
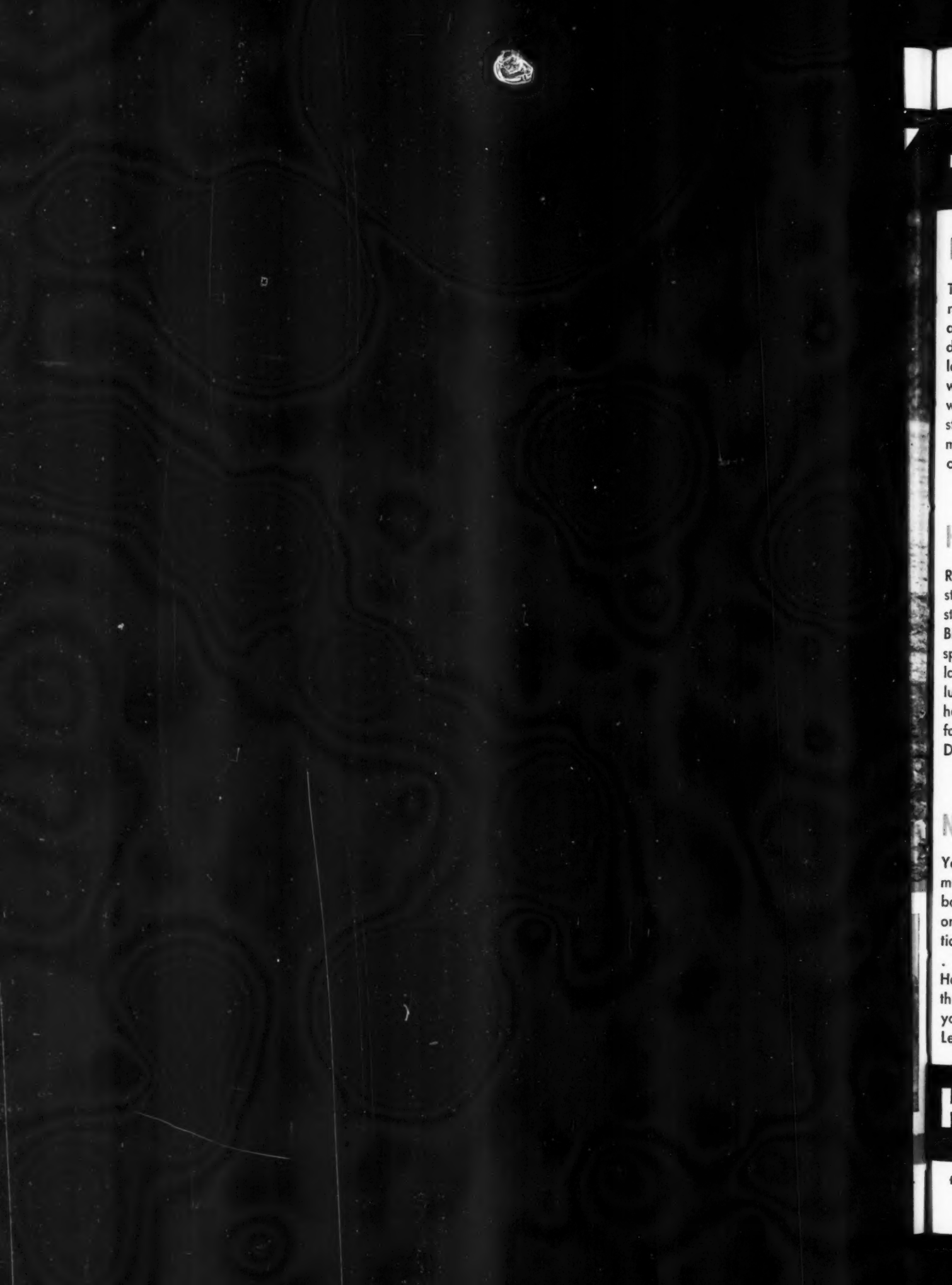
HEAVY-DUTY

KOEHRING HEAVY-DUTY SHOVELS CAN CUT YOUR EXCAVATING COSTS

Here is a profitable way to cut your stripping and materials handling costs all around. Match high-speed Dumptor-hauling with dependable, heavy-duty Koehring excavators. It's a big production team, built to work together. Dumptor's heavy-duty construction, easy-loading design, fast hauling and dumping, match Koehring excavator's rugged digging ability and fast-operating speeds . . . give you matched speed and strength to keep output high, costs low. For complete facts on the big 1½-yard 605 (illustrated) . . . ¾-yard 304, or ½-yard 205 excavators, see your Koehring distributor . . . or write for bulletin.





for *heavy hauling...*

DUMPTOR BODIES BUILT FOR HEAVY ROCK SERVICE

To meet the toughest hauling conditions of mine, quarry and construction service, Koehring Dumptors have a ton of strength for every ton of payload. Heavy-duty bodies stand up under the severest shocks of loading rock from big mine and quarry shovels. All-welded sides, ends and bottom are heavily ribbed with 4" channels. High-carbon steel gives extra strength at stress points where abrasive rock action is most severe. Three-layer bottom of seasoned 1-⅝" oak between two 5/16" steel plates cushions shocks.

HEAVY-DUTY CHASSIS TAKES ROUGH HAUL ROAD SHOCKS

Rugged, 8" ship-channel main frame . . . 4" chrome steel drive axles . . . and cast alloy-steel "I" beam steering axle, add extra strength to Dumptor chassis. Big tires absorb road shocks. There are no leaf springs . . . only one big-double-coil spring on oscillating steering axle. That means no spring shackles to lubricate . . . no spring maintenance. And . . . you have 6 HP for every ton of gross vehicle weight for faster acceleration, less shifting, more grade-ability. Dumptors climb grades up to 24% with full load.

NO BODY HOIST MAINTENANCE WITH GRAVITY DUMP

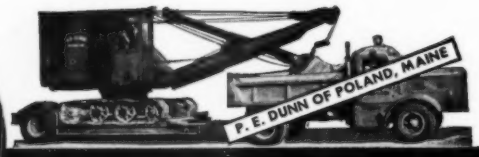
You don't lose time or spend money on body-hoist maintenance because Dumptors have no troublesome body hoists. Gravity dumps the full 6-yard load in one second. Free swinging, kick-out pan breaks suction, keeps dumping fast even in stickiest materials . . . adds an extra 3/16" steel to Dumptor bottom. Heavy-duty construction like this is your assurance that Koehring Dumptors will profitably stand up to your heaviest off-the-highway hauling assignments. Let your nearest Koehring distributor show you how.

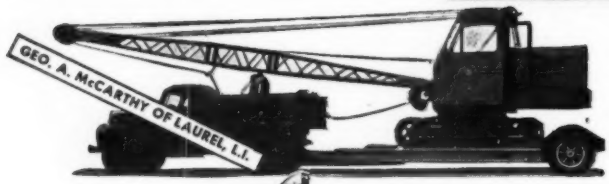
KOEHRING COMPANY, Milwaukee 10, Wisconsin

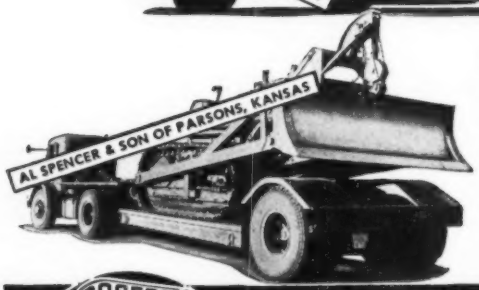
Subsidiaries: PARSONS • JOHNSON • KWIK-MIX

Dumptor—Trademark Reg. U.S. Pat. Off. K809

JUST 3 OF MANY Satisfied ROGERS 'TAGALONG' OWNERS







who are profitably hauling light and medium shovels, cranes, bulldozers, etc., to and from the jobs with their dump truck serving as the tractor.

The "Tagalong" front loader loads and unloads from the front after trailer is easily disconnected from the dump truck, and it can be a "one man operation" performed in short time.

Write for literature and prices on this versatile trailer.

ROGERS HEAVY DUTY Gooseneck Trailers

ROGERS BROTHERS CORPORATION
DESIGNERS and BUILDERS of HEAVY DUTY TRAILERS
SINCE 1915
136 ORCHARD ST. ALBION, PENNA.

Notes from the manufacturers

The Thew Shovel Company, Lorain, Ohio, regrets to announce that Don G. Savage, Vice President and General Sales Manager of the firm, died, July 25, of a heart attack at his home in Lorain. He was 50 years old.

Ironically, death came only ten days after his elevation to the Vice Presidency of the power shovel and crane manufacturing company.

Mr. Savage, who was also a member of the firm's board of directors, started to work with Thew 28 years ago as a clerk. Since 1935 he had been General Sales Manager. Previously, he held the position of Southeastern Sales Manager with headquarters in Atlanta, Georgia, and had represented Thew in New York and Detroit.

Raybestos - Manhattan, Incorporated, Passaic, New Jersey, announces the appointment of Littleton C. Barkley

DIG REAL DIVIDENDS!

WELLMAN
Williams Type
Welded Buckets

Operators prefer the Wellman Bucket for its balance, easy handling, and digging power. Owners prefer the Wellman Bucket for its bigger payloads, lower maintenance cost. These features are not accidental. Wellman pioneered in welded construction of rolled steels which make these buckets lighter, stronger, for greater yardage at lower costs. In all types and sizes, you'll do better with a Wellman!

There's a Wellman Bucket for every service

THE WELLMAN ENGINEERING COMPANY
7002 CENTRAL AVENUE CLEVELAND 4, OHIO

to the position of General Sales Manager, Asbestos and Rubber Products, West Coast Division. In his new capacity, Mr. Barkley will supervise the sales of the Manhattan Rubber, Asbestos Textile and Packing and Equipment Sales Divisions of the Corporation.

Harry H. Barber, Chairman of the Board of the Barber-Greene Company, Aurora, Illinois, manufacturers of bituminous road building equipment and material handling machinery, died September 6. He had been in failing health for several years.

Mr. Barber, one of the pioneer designers of modern construction equipment, retired as President of Barber-Greene Company, September 25, 1945, to become Board Chairman. He would have been 71 years of age on January 18.

One of Mr. Barber's principal contributions to the construction industry was the design and development of a complete line of entirely new machines and methods for asphalt construction, which revolutionized the industry and made possible new standards for road and airport construction.

Socony-Vacuum Oil Company, Incorporated, New York 4, New York, announces that a general expansion, improvement, and rehabilitation program is under way at its Casper, Wyoming, refinery. This refinery handles two types of crude oil from fields in Wyoming. Its products include kerosene, distillate heating fuels, tractor and diesel fuels, and asphalt, which are marketed in Wyoming, Colorado, Nebraska, and other states through the firm's White Eagle Division.

All-State Welding Alloys Company, White Plains, New York, announces the appointment of the following distributors for the company's line of low-temperature welding and brazing alloys and fluxes: H. M. Parker & Son, 217 West Colorado Blvd., Glendale, California; Herrick Company, 352 "C" Street, South Boston, Massachusetts; L. W. Jaeger Ignition Company, 2040 Columbus Avenue, Springfield 4, Massachusetts; Welding Supply Company, 65 Van Riper Avenue, East Patterson, New Jersey; Littrell Parts, 319 East Sixth Street, Medford, Oregon.

General Tire & Rubber Company, Akron, Ohio, has appointed Robert Moran as Manager of Industrial Tire Sales. Mr. Moran has been associated with distribution and sales throughout his twelve years with the company. His most recent assignment was in Truck Tire Sales.

General Electric Company, Schenectady, New York, has moved its Welding Equipment Divisions to Fitchburg, Massachusetts.

Under the new organization, sale of General Electric welding products for the entire New England area

Custom-Bilt
for Better Performance
and Longer Life

On Shovels, Draglines, Cranes and other Excavating, Road Building and Construction Equipment, GATKE Type 300 Clutch Discs are giving results *not even approached by ordinary clutch discs.*

The exclusive GATKE-Developed Structure engages with smooth cushioned action, yet produces power not obtainable with other materials.

Tremendous wear life and high heat resisting materials assure long, dependable service even under severe operating conditions.

Made in plain and gear toothed types—sizes to 54" and larger.

RESULTS TALK: Equip Clutches with GATKE Type 300 Discs and see how much you have been missing. *Just send dimensional print for quotation.*

GATKE TYPE 300
CLUTCH DISCS

GATKE makes Brake Lining, Clutch Facings & Frictions for all requirements. Just tell us what you need.

Gatke
CORPORATION
232 N. La Salle St.
Chicago 1, Illinois

ARE YOU OPERATING

ARMY TRUCKS?

We are Specializing in Parts For The Following Army Trucks

GMC—Studebaker—Reo
2½ TON 6x4 and 6x6

CHEVROLET 1½ TON 4x4—JEEP

DODGE ½, ¾, 1½ TON 4x4

FOR FREE "PARTS & PRICE LISTS"
SEND US A POSTAL CARD TODAY GIVING MAKE & CAPACITY OF YOUR TRUCK

W. O. Hensley Truck Parts
P.O. BOX 747 PHONE CRAWFORD 3734
517 No. 25th ST., TERRE HAUTE, IND.

will be handled by the Welding Engineering Sales Corporation, Boston. In addition, portions of western Massachusetts, Maine, Vermont, and New Hampshire also will be served by direct factory sales from General Electric arc welding headquarters in Fitchburg.

Clapp & Poliak, Incorporated, 350 Fifth Avenue, New York 1, New York, exposition managers, announce that the third national Materials Handling Show will be held at Convention Hall, Philadelphia, January 10-14. The exposition is devoted to various systems of handling materials in production and shipment.

The announcement states that the show will be one of the five largest annual industrial expositions to be held in this country. 192 companies have leased 96,725 square feet of net exhibit space, and the remaining 16,000 feet are expected to be occupied when the show opens.

This year the show will be jointly sponsored by the management and materials handling divisions of the American Society of Mechanical Engineers and the Materials Handling Institute.

Emphasis in both exhibits and conference talks will be placed on the need for greater efficiency in handling to reduce production and distribution costs, and the greater use of existing facilities for storage.

Among the many types of equipment to be exhibited will be hand trucks, lift trucks, conveyors, hoists, monorails, portable elevators, stacking units, cranes, tractors, trailers, fork trucks, skids and pallets, and their respective accessories.

Admission to both exhibits and conference will be by registration. No charge will be made. Advance registration cards may be obtained from Clapp & Poliak.

Blaw-Knox Company, Pittsburgh, Pennsylvania, has acquired, through an exchange of stock, the Foote Company, Incorporated, Nunda, New York, manufacturer of road-building equipment.

Principal products of the Foote Company are concrete paving mixers, black top paving machines and mixers for asphalt road maintenance. These supplement without duplication the line of construction equipment produced by Blaw-Knox which includes bins and batchers, truck-mixers, finishers, spreaders, subgraders, steel forms, clamshell and concrete buckets, etc.

Pioneer Engineering Works, Incorporated, Minneapolis 13, Minnesota, has appointed A. J. Belanger as Bituminous Equipment Sales Engineer. Mr. Belanger will serve as a specialist on sales in the United States and Canada.

Hewitt-Robins, Incorporated, Hewitt Rubber Division, Buffalo 5, New York, has appointed F. L. Murdock & Company, Tulsa, as distributor for the Hewitt line of hose, conveyor and transmission belting, and packing.

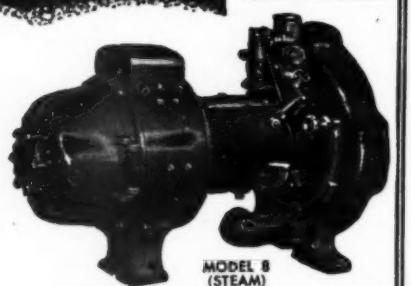
The George Haiss Manufacturing Company, Incorporated, New York City, New York, announces the appoint-

MOON Generators
TURBO and BELT DRIVEN
for LIGHT and POWER

The Ideal Small Power Plant

IMPORTANT MOON FEATURES

- COMPOUND WINDING AND SENSITIVE GOVERNOR on steam driven models maintain steady voltage from No load to Full load.
- NEW AUTOMATIC SIGHT-FEED OILERS.
- AUTOMATIC OVERSPEED CUT-OFF VALVE prevents any possible overspeed damage to generator.



MODEL 8 (STEAM)

For Lights . . . Ventilating Fans . . Other Electrical Equipment . .

SEND TODAY FOR ILLUSTRATED CIRCULARS.
MODELS FROM 1 TO 7½ KW CAPACITY.

Moon MANUFACTURING CO.
ESTABLISHED 1893
122 N. JEFFERSON ST. . . . CHICAGO 6 . . . ILLINOIS

save time between jobs with JAHN TILT TRAILERS

Tilt—load—and you're off in a matter of minutes with a Jahn Tilt Trailer. No jacks or loading ramps required. One-man operation. Positive, automatic safety lock holds platform in position when loaded or empty. Rubber mounted drawbar absorbs road shocks and protects both truck and trailer. Ideal for transporting tractors—rollers—compressors—shovel-loaders—mixers, etc. Jahn Tilt Trailers are available in 8 ton capacity tandem axle and 5 ton capacity single axle models. Write for specifications and illustrated bulletin or see your nearest Jahn distributor.

C. R. JAHN COMPANY
Dept. 49—1106 W. 35th Street, Chicago 9, Illinois
Heavy duty Trailers from 5 to 100 tons

ment of H. D. Williams, 6212 Homer Street, Philadelphia, as the company's exclusive representative in eastern Pennsylvania and southern New Jersey. Mr. Williams' organization will both sell and service the new and redesigned line of Haiss material handling conveyors, car unloaders, and loaders.

Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, announces the appointment of E. G. Kullman as Assistant General Sales Manager for its Tractor Division.

In addition to the appointment of Mr. Kullman, the firm announces that Max Bradshaw has been made Tractor Division District Manager for Ohio, West Virginia, and Western Pennsylvania.

Timken Roller Bearing Company, Canton 6, Ohio, has elected Whitley B. Moore Vice President in Charge of Sales. He succeeds L. M. Klinedinst, who has retired after 43 years of service.

Construction Products Corporation, Lynwood, California, has announced the appointment of Fred Schneller to the newly created position of Eastern Sales Manager with offices at 5515 Bulwer Avenue, St. Louis 7, Missouri.

Mack Trucks, Incorporated, New York City, New York, has appointed John Walker as Manager of Off-Highway and Mining Truck Sales. Mr. Walker will make his headquarters in Mack's executive offices in New York's Empire State Building.

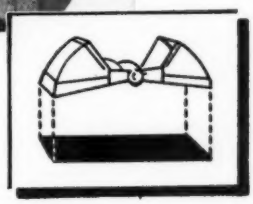
R. G. LeTourneau, Incorporated, Peoria, Illinois, has appointed Harry R. Powers Eastern Sales Manager. Mr. Powers has been district sales representative for LeTourneau since joining the company after his discharge from the army in 1945. He succeeds E. M. Ferguson who resigned from the firm.

Caterpillar Tractor Company, Peoria 8, Illinois, has appointed The Inland Machinery Company, LeGrande, Oregon, as distributor of "Caterpillar" products in the Oregon counties of Baker, Union, Wallowa, Grant, and Harney. This territory was formerly served by Bunting Tractor Company, which retains as its area nineteen counties of Idaho and Malheur County, Oregon.

Inland Machinery Company will sell and service the complete line of "Caterpillar" diesel track-type and wheel-type tractors, diesel engines, diesel motor graders, and earthmoving equipment.

ERIE *Barge Type* **Bucket**

In this type the large deck area achieved means bigger payloads in stock piling and barge rehandling work. Erie's booklet on 2-line buckets gives you complete data on this type and 3 other classes of Erie Buckets. Write for copy today.



Compare **DECK AREA**

¾ Yd.	27.21 Sq. ft.
1 Yd.	30. Sq. ft.
1¼ Yd.	32.3 Sq. ft.
1½ Yd.	38.7 Sq. ft.
1¾ Yd.	42.4 Sq. ft.
2 Yd.	45.1 Sq. ft.
2¼ Yd.	53.5 Sq. ft.
2½ Yd.	57.6 Sq. ft.
3 Yd.	60.9 Sq. ft.

Write for Catalog **2L-1** *Today*

ERIE
STEEL CONSTRUCTION COMPANY
4811 GEIST ROAD • ERIE, PENNSYLVANIA

S-T-R-E-T-C-H THE LIFE OF YOUR EQUIPMENT with...

MANGANAL

(TRADE MARK REG. U. S. PAT. OFF.)

11% to 13½% Manganese-Nickel Steel

ROUND
APPLICATOR BARS

Sold in square, round, flat and special shapes. Can be cut to length required. Manganal costs less in the long run because it work-hardens under impact and abrasion, therefore lasts longer. Gets your equipment back on the job faster by eliminating the building up of weld material.

NAME OF NEAREST DISTRIBUTOR ON REQUEST

FREE! Our Booklet "The Welding of 11% to 14% Manganese Steel."

STULZ-SICKLES CO.
Sole Producers
91 N. J. Railroad Avenue, NEWARK 5, N.J.

BUYERS

of

Tractors

and

Road Building Machinery

For Export

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MACHINERY EXPEDITERS

170 Broadway
New York 7, N. Y.

Phone:
BEekman 3-7975, 6, 7, 8, 9

New trade literature

Title: **Hercules Diesel "Textbook"**

Subject: Now available to the field is "Hercules Diesel Engines — General Information." Among the things presented in detail are: the fundamentals of diesel power and its advantages; Hercules diesel engine construction with sectional illustrations; a treatise on the patented Hercules combustion chamber and a detailed description of how it functions; the operation of the four cycle engine with functional charts and diagrams.

Cold engine starting is given considerable attention, along with an analysis of various units of starting equipment.

Where to Get: Hercules Motors Corporation, Canton, Ohio (Free).

15-B

NEW Standard

Shovel Front Ends . . $1000.00

"Red Arch" ½ c.y. type AX

Dragline Buckets $450.00

15-B PARTS

50% Off List Price

Send for Listing

SPECIAL NEW

7 c.y. Type AY "Red Arch" heavy duty Dragline Bucket

$5000.00 Value $2000.00

28 — NEW CRANES

½ and ¾ c.y.

AT LESS THAN COST

these cranes are in our yard

Call, Wire or Come In

Phone Michigan 2-1515 C.C.S. INC. Geo. A. Carlson, Pres.

Central Contractors Service, Inc.

1150 N. North Branch St., Chicago 22, Ill.

Title: **"Tuffy Slings" Booklet**

Subject: The newest 9-part "Tuffy" wire rope slings are described and illustrated in a bulletin recently issued by Union Wire Rope Corporation.

The bulletin describes the slings in detail, shows photographs of the products being used in various operations, and furnishes charts of safe working loads for angular pulling and angles at which the slings operate most efficiently. Information on ordering and tables of standard eye sizes are also included.

Where to Get: Union Wire Rope Corporation, 21st & Manchester Avenue, Kansas City 3, Missouri (Free).

Title: **Portable Generator Bulletin**

Subject: Homelite Corporation has just issued a two-color twelve-page bulletin describing the firm's complete line of portable gasoline-engine-driven generators.

The booklet shows, in words and pictures, the many uses for portable electric power. A check list of qualities to look for in a generator is included.

Complete structural details of Homelite units are described and illustrated with cutaway photographs.

Where to Get: Homelite Corporation, 2408 Riverdale Avenue, Port Chester, New York. Ask for Bulletin L-408 (Free).

Title: **"Cedarapids" Bulletin**

Subject: A new 20-page bulletin on Cedarapids portable unitized crushing, screening, and washing plants has just been published. The booklet

(Continued on page 80)

OWEN BUCKETS carry Dunking Insurance

Sealed Grit-Proof Bearings

RIGHT HERE

Day in and day out, on the job in sand and gravel pits and hard at work dredging, Owen Buckets carry "dunking" insurance in the form of sealed, grit proof center shaft bearings.

Abrasive materials are prevented from causing excessive wear and longer bucket life is assured.

The Owen Bucket Company

6095 Breakwater Avenue, Cleveland, Ohio

Branches: New York • Philadelphia • Chicago • Berkeley, Cal.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date — 15 of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

Used Marion Model 4161 dragline, 110 ft. boom, 4 yd., central location. Box 3292

FOR SALE
2½-yd. P & H Electric Shovel, Model 1225

This shovel has a 3-yard bucket and is in very good mechanical and electrical condition.

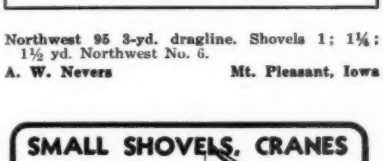
Shovel can be demonstrated under power.

Electrical equipment: 3 phase, 60 cycle, 2300 volts.

Good selection of new parts to be sold with shovel.

JOHNS MANVILLE PROD. CORP.
Lompoc, California

Northwest 95 3-yd. dragline. Shovels 1; 1¼; 1½ yd. Northwest No. 6.
A. W. Nevers **Mt. Pleasant, Iowa**



SPECIAL ACME BARGAINS

Bucyrus 30-B crawler diesel quarry shovel—1¼ yd., $3500.

Northwest crawler gas cranes, draglines and shovels, ¾ to 1¼ yd.

Bay City truck crane — ½ yd.

25-ton Browning locomotive crane with practically new boiler and new oil burner.

All the above overhauled.

Priced to sell.

THE ACME EQUIPMENT COMPANY
14057 Schaefer Hwy. **Detroit, Michigan**

Model 20-B Bucyrus-Erie steam shovel ¾ yard bucket caterpillar traction, working condition. Price $3000.
P. S. Kramer, Contractor
7 Smith St. **Paterson, N. J.**

36 Marion steam coal loader, fair condition and on cats. Price $1500.
Robinson Coal Company
Pleasanton, Kansas

1—Scoopmobile, 1947, 3,000 lb. cap., ½ yd. bucket, 12 ft. track with extensions, lift fork attachment.
1—Pumperete, Rex, single 160, with 436 ft. pipeline. New April 1948, used 3 months, reconditioned and repainted July 1948.
1—Tractor, Caterpillar, RD-4, 7 ft. blade, rear power control unit, with Adams Hauling Scraper, Model 30, 3-5 yd.
1—Mixer, concrete, Smith, 14 S, with Allis-Chalmers 10 HP, 440-volt motor.
RENIGER CONSTRUCTION COMPANY
127 N. Cedar **Ph. 57291** **Lansing, Mich.**

Three gasoline powered 10-ton rollers; one 5-ton three-wheel gasoline powered Galion roller; one 5-ton Littleford gasoline powered tandem roller; one Allis-Chalmers Model AD diesel powered grader; one Austin-Western Model 99-M diesel powered grader; one International diesel powered TD-14 dozer; one Rosco 800 gal. asphalt distributor truck, full circulating bars, instantaneous shutoff.

Susquehanna Paving Materials Company
137 S. 2nd St. **Sunbury, Pa.**
Phone: Sunbury 1514

1 Heavy duty 2½ yd. shovel front 24 ft. boom and 23 ft. stick, complete to fit 48-B Bucyrus.
1 1¼ yd. Osgood loading shovel. Box 3295

Surplus Swivel Hook Double Sheave Block
1 40 ton "American" 24" swivel hook double sheave block, diamond pattern with cast steel sheaves grooved for ⅞" rope. Sheaves to be bushed with plain bronze bushings, with center bored sheave pin and ¼" Alemite hydro grease fitting No. 1980 equipped with 300 lb. cheek weights and 5½" swivel hook. Total weight of block 1190 lbs. Dwg. BEFP 1-M-6560.
BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

MECHANICS • HOME STUDY
Step up your own skill with facts & figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in handy form. Fully Illustrated. Easy to Understand. Highly Endorsed. Check book you want for 7 days' Free Examination. Send no Money. Nothing to pay postman. ☐Carpentry $6 • ☐Auto $4 • ☐ Oil Burners $1 ☐Sheet Metal $1 • ☐Welding $1 • ☐ Refrigeration $4 ☐Plumbing $6 • ☐Masonry $6 • ☐Painting $2 • ☐Radio $4 ☐Electricity $4 • ☐Mathematics $2 • ☐Steam Engineers $4 ☐Machinist $4 • ☐Blueprint $2 • ☐Diesel $2 • ☐Drawing $2. If satisfied you pay only $1 a month until price is paid.
AUDEL, Publishers, 49 W. 23 St., New York 10, N. Y.

Bucyrus-Erie No. 8 bit dresser. Complete and in perfect operating condition. Located in Washington State. Box 3271

4 — slightly used, but like new, "Firestone" rubber tires 21.00"/28", 20 ply, "GG Earthmover" with tubes and flaps. At bargain price. Box 3288

(5) MISSISSIPPI bottom dump wagons, Model #80 10 cu. yd. with International diesel I-9 tractors. Only been used three months. Factory new price $13,650. Our price $5500.
(1) PIONEER — EAGLE log washer, 36" by 20 ft. Twin paddle, mounted on wheels. BRAND NEW. Reg. factory price $11,000. Our price $5500.
(1) BARBER-GREENE asphalt dryer, Model #831. BRAND NEW, $2750.
(1) Barber-Greene #44-C Ditcher. Excellent $3500.
(1) TD-9 INTERNATIONAL diesel tractor with Trackson 18 ft. telescopic boom. Like new. $5000.
(2) INGERSOLL-RAND #40 drill sharpeners. New 1943. Used little. $350.
(1) CLEVELAND pneumatic wagon drill. A-1. $800.
All sizes of clamshell buckets, some new, at cut prices. Booms to fit various machines.
Wenzel Machinery Rental & Sales Co.
2136 Jefferson Street **Kansas City, Mo.**

New independent diesel driven electric generating plant, 650 H.P. diesel engine, 420 K.W., 2300 volts, 3 phase, 60 cycle generator, mounted on rubber-tired special trailer. Located in Central Nebraska. Box 3277

Shovels-cranes, 1¼, 1½, 2, 2½-yds.
Draglines, 1¼ to 5-yd., diesel and elec.
Trench excavators, Buckeye & P&H (5).
A-C gyratory rock crushers, 30", 27", 20".
Jaw crushers: 60"x42", 28"x36", 24"x36".
Pennsylvania hammermill, 27"x49", SXT-11.
Plymouth 10-ton gas locomotive, 36" ga.
Vulcan 20-ton gas locomotive, 36" ga.
Locomotives, diesel, gas, stm., 5-52 tons.
Athey 16-yd. side dump trailers (2), cats.
Autocar dump trucks (4), 10-yd., gas, 1946.
Gold placer dredges, 4½ & 7½ cu. ft.
Power plant, steam turbo-electric, 1500 KW.
Guiberson diesel engines, 150-200 HP, unused.
B-Erie shovel front att., 2½ yd., 52B-55B.
H. Y. Smith Co., 828 N. B'way, Milw. 2, Wis.

ALL-STEEL DERRICKS

10—30 ton capacity BRAND NEW Wiley all steel stiffleg derricks, 32' masts, 60' booms, complete; can furnish with gasoline, electric or steam hoists.

ALSO

Air compressors, bins, boilers, cable, conveyors, cranes, crushers, engines, hammers, conc. mixers, light plants, pneumatic tools, pavers, pumps, saw rigs, welders.

EQUIPMENT CORPORATION of AMERICA

CHICAGO 12 1170 S. Washtenaw Av.	PHILADELPHIA 2 1505A Race St. Schaff Bldg.
PITTSBURGH 36 P.O. Box 933D	NEW YORK 7 30D Church Street

(Continued on page 80)

For Sale

(Continued from page 79)

USED 18" OR 20" ELECTRIC HYDRAULIC DREDGE. MID-WESTERN LOCATION.
BOX 3251

SURPLUS STOCK SALE
Dippers for Bucyrus-Erie Shovels
1—¾ cu. yd. drag shovel dipper—17-B.
3—⅝ cu. yd. drag shovel dippers, 18-B.
1—2 cu. yd. rock dipper 75-B.
New Dragline Buckets
2¼ yard Red Arch Type AX medium duty bucket.
5 yard Red Arch Type AY heavy duty bucket.
6 yard Red Arch Type AY heavy duty bucket.
F.O.B. Works
Write for any further information desired
BUCYRUS-ERIE COMPANY
Parts Department
South Milwaukee **Wisconsin**

Pull shovel attachment for Manitowoc Model 2000. New, never used. Located Chicago, immediate delivery. Box 3289

Complete shovel front for Bucyrus-Erie 10-B twin rope crowd machine. Also 28 ft. clamshell boom with drum lagging for same machine. Box 3287

Two 3¼ cubic foot ladder dredges, one electric and the other diesel driven, sectionalized construction, well maintained, immediately available. Western location. Box 3294

FOR SALE

- **Two Euclid dump trucks, new 1943; equipped with 10-yd. bodies, Cummins Diesel engines.**
- **One Northwest shovel and crane Model 104, equipped with 1½-yd. bucket, 40-ton boom.**

One Model WS Allis-Chalmers tractor with Baker bulldozer.

KLATZKY BROTHERS
NEWBERRY, MICHIGAN

POSITIONS WANTED

CAN THIS MAN HELP YOU?

College graduate with 13 years quarrying, crushed stone and building block manufacturing experience and some sales experience, who lives in Central Eastern Pennsylvania, desires a permanent sales representative connection with a manufacturer or distributor of power shovels or crushing, screening, conveying, block manufacturing or allied lines of equipment, or mill supplies. Territory — Eastern Pennsylvania and adjacent areas. For further information write: Box 3286

Can operate any kind of shovel, dragline, crane or clamshell—steam, diesel, gas or electric. Can do own repair work. Experienced in quarry, ore and coal stripping. Prefer quarry or coal stripping. Familiar with grading work. Will go anywhere. Have release. Box 9254

Dragline crane operator with 28 years experience building, repairing and operating gas, diesel, steam and electric machines including Bucyrus-Erie, Northwest, Bay City and other makes. Has worked overseas. Willing to go anywhere in the world on long job that would enable wife to accompany him. Box 3291

WANTED: High Lift shovels for coal stripping. Box 3284

WANT BUY FOR EXPORT
2 - 6 to 10 YD. STEAM OR DIESEL OR ELEC. STRIP SHOVELS
DARIEN CORP.
60 E. 42nd St., N. Y. 17, N. Y.

New Trade Literature

(Continued from page 78)

gives detailed descriptions and specifications on the four basic units that make up unitized plants — primary crushing units, scalping units, secondary crushing units, and wet or dry screening units.

Where to Get: Iowa Manufacturing Company, Cedar Rapids, Iowa. Ask for Bulletin Unit 2 (free).

Title: **Gravel Plant Booklet**

Subject: Now available is a new 12-page booklet explaining the principle of bottom deck feed as applied to Pioneer duplex crushing and screening plants for gravel. Illustrated with cut-away sections in color, the booklet sets forth the fundamentals to operation of portable gravel plants.

Where to Get: Pioneer Engineering Works, 1515 Central Avenue, Minneapolis 13, Minnesota (Free).

Title: **Descriptive Folder**

Subject: The Air Reduction Sales Company has announced a descriptive folder which describes in detail its five available welding and cutting instruction books.

According to the publisher, these books are filled with material based on Airco's thirty years of experience in the welding and cutting field.

Two volumes are devoted to arc welding and two to oxy-acetylene welding and cutting. The fifth book is a "Manual of Design for Arc Welded Steel Structures."

Where to Get: For a copy of the descriptive folder on these books, write Department A19-24P, Air Reduction Sales Company, 60 E. 42nd Street, New York 17, New York.

Title: **Belt Conveyor Catalog**

Subject: "Your Best Booster," a catalog on New Holland belt conveyors, has just been issued. The two-color, four-page leaflet presents conveyor features through pictures and diagrams.

Six tables list information on capacity, horizontal horsepower requirements, additional horsepower required to lift load on conveyor, headshaft speeds, horsepower ration of American Reduction Units, and horizontal and vertical distances of various angles of incline.

Where to Get: New Holland Manufacturing Company, Mountville, Pennsylvania (Free).

Title: **"Caterpillar" Power Booklet**

Subject: In this publication, "The Power for Crushing and Screening plants," Caterpillar Tractor Company reviews its various sizes of diesel engines, used for crushing plant operations. The adverse working conditions of dust and grit connected with this type of work is discussed in relation to the advantages of diesel engines.

Where to Get: Caterpillar Tractor Company, Peoria 8, Illinois. Ask for Form 11467 (Free).

DREDGES

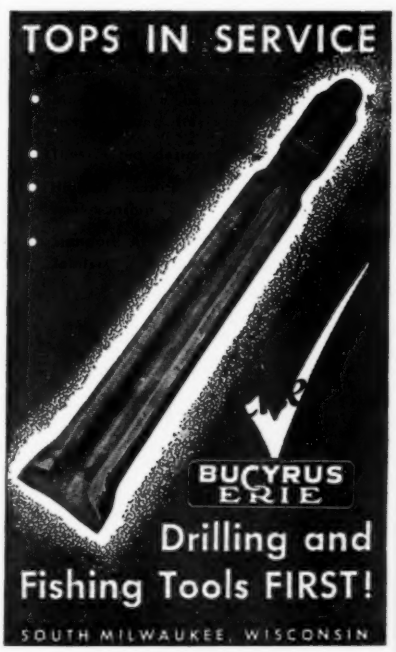
HYDRAULIC
DIPPER
CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters

If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905



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Preformed . . .

THE NEW STANDARD

Those who use preformed wire rope do so because of its exceptional performance. Those who don't use it, should use it if only to make a comparison.

Those who use it know that

it lasts longer
is easier to install
is safer to use
and costs less to use

the LITTLE MACHINE that gets BIG results!

THE 1/3 YARD SCHIELD BANTAM

TRUCK MOUNTED TRENCH HOE
SHOVEL • CLAM • DRAGLINE
PILEDRIVER • CRANE

NORMAL CAPACITY PER HOUR

- **Shovel or Dragline — 60 yards**
- **Trench Hoe — 100 feet of 5 ft. ditch**

Drive up and dig in. The Schield BANTAM goes into tight spots and gets the job done fast and economically. Its *full circle design* and smooth, *fast cycle operation* pile up profit-making yardage.

Big machine design with *no strain* on center pin, high strength alloy construction throughout. All major assemblies roll on ball bearings for easier handling, longer service life, lower maintenance costs.

Easily changed booms and buckets make the Schield BANTAM 6 machines in one, ready on short notice to speed across town or across country. Mounts on any 1½ ton truck chassis.

For performance that spells profits in excavation and backfill, drainage work, basement digging, handling construction materials, etc., put a Schield BANTAM on the job.

Write for complete details now

THE SCHIELD BANTAM CO., INC.
202 Park Street **Waverly, Iowa**

Fast on the job and fast on the road. The BANTAM *Trench Hoe all set to travel.*

The BANTAM *Shovel is ideal for economical handling of stockpile materials.*

Dragline with box boom. The BANTAM *is convertible in a matter of minutes.*

SOLD AND SERVICED BY LEADING CONSTRUCTION MACHINERY DEALERS THROUGHOUT THE UNITED STATES, CANADA, AND FOREIGN COUNTRIES